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CONTENTS.

	PAGE.
EDITORIALS:	
The Copper Excitement Spreading to the Black Hills	93
The Members of the Institute at Leadville	93
Prof. William Stanley Jevons	93
The Cost of Mining Iron Ore on Lake Superior	93
Mr. Jacob Reese, Inventor-at-Large	93
The Meeting of the Western Iron Association	93
The Appropriations for the Sacramento and San Joaquin Rivers	93
The Manufacture of Spiegeleisen from the Residues of New Jersey Zinc Ores	93
The O'Fallon Polytechnic Institute of Washington University, St. Louis	93
Testing Explosives	93
The Denver Exhibition	94
The Duty on Raw and Manufactured Copper	94
The Tamarack Mining Company	94
The Belle, Butte, Montana	95
The Copper Tariff	96
Pyrites Deposits and the Use of Pyrites in the Manufacture of Sulphuric Acid.—II	96
The Manufacture of Artificial Fuel from Anthracite Dust at Port Richmond	97
Railroad News	98
A Rotary Pumping-Engine with Intermittent Action	98
The Montana Commissioner	99
The Liquation of Base Bullion at Freiberg	99
GENERAL MINING NEWS:	
Arizona	99
California	99
Colorado	99
Dakota	100
Idaho	100
Michigan	100
Montana	100
Nevada	100
New Mexico	100
Pennsylvania	100
Utah	100
Wyoming	100
FINANCIAL:	
Gold and Silver Stocks	101
Copper Stocks	101
BULLION MARKET	102
METALS	102
IRON MARKET REVIEW	103
COAL TRADE REVIEW	104
STATISTICS OF COAL PRODUCTION	—
FREIGHTS	—
Advertisers' Index	ix

THE copper excitement which has been keeping Arizona and New Mexico so busy during the past two years is spreading to the Black Hills and Wyoming, where numerous strikes are reported. As yet, little that is definite is known concerning these finds.

BY the time to-day's JOURNAL reaches its readers, the members attending the meeting of the American Institute of Mining Engineers will have arrived at Denver. As will be noted from the letter of our regular Leadville correspondent, the visit to that great camp will be very enjoyable, as the local committee have made special efforts for their reception.

PROF. WILLIAM STANLEY JEVONS, who was born in Liverpool in 1835, was drowned while bathing at Bexhill, near Hastings. Professor JEVONS was known as one of the foremost writers on political economy in England. His pamphlet on the probable exhaustion of the British coal mines created much excitement at the time it was written, and his many papers on subjects coming within his special field have always commanded and received attention.

THE Marquette *Mining Journal* doubts some of the figures given by us on the cost of mining iron ore on Lake Superior. Our object in giving the data, obtained from a gentleman prominently connected with that industry, was to correct some very wild statements to which currency had been given by the press. We did not even hint at the idea of connecting those figures with any tariff argument. The iron-ore producers are going to lay "facts" before the coming convention of iron and steel manufacturers at Cresson Springs. We doubt whether they will have the courage to file copies of their annual balance-sheets for the last five years. The figures would, we believe, bear us out and alienate the sympathies of producers of pig.

THE indefatigable Mr. JACOB REESE is rapidly looming up as the inventor of any thing which the labor of others proves to be valuable in the manufacture of steel. One of these cases is that in which he claims priority of invention of what is known in the metallurgical world as the Terrenoire process of making solid steel castings. This process was the result of what probably has been the most elaborate and exhaustive series of systematic scientific experiments ever conducted in making open-hearth steel. They were brilliantly described by the late ALEXANDER L. HOLLEY, who, we believe, took a strong interest in endeavoring to introduce the process here. The Patent-Office has just rendered a decision which, we understand, is favorable to Mr. REESE.

THERE is nothing indicating weakness in the action taken by the meeting of the Western Iron Association, held at Pittsburg on the 16th. The districts affected by the strike, including Pittsburg, Wheeling, and the valleys, were fully represented, and declared firmly their intention not to yield. The opinion prevailed that the best measure to adopt would be to start with non-union men wherever practicable. Thus far, a number of mills have been reasonably successful in carrying out this programme. The Wheeling delegation announced an important resolution, to the effect that hereafter they would not, as heretofore, pay 25 cents per ton more for puddling than the Pittsburg scale. This action, if successfully carried out, would place the two districts on an equal footing in many markets.

THE widespread and just dissatisfaction at the passage of the Harbor and River Appropriation bill is leading some of its opponents too far. Some journals, not fully acquainted with the merits of the case or entirely at sea concerning them, take exception to such items as $260,000 for the improvement of the Sacramento River and $40,000 for the San Joaquin. The hydraulic companies have already begun to do work in building retaining dams for any *débris* they may deposit in the future. That they should be called upon to stop entirely and the mines worked by some less damaging and expensive process is the hight of absurdity. They are doing all that could be reasonably expected of them, and it would be clearly unjust to ask corporations and individuals now engaged in this industry to repair the damages done by predecessors or to cease to utilize their property.

IN the metallurgy of iron, there is probably no process that requires closer and more constant watching than the manufacture of spiegeleisen from the residues of New Jersey zinc ores. They contain an appreciable quantity of zinc, which, it is true, is a valuable by-product; but which, on the other hand, causes inconvenience by the deposit of considerable dust in the hot-blast stoves, limiting the heating capacity of the latter. The metal itself shows variations in grade, and as uniformity is necessary, in view of the guarantee furnished to purchasers, the spiegeleisen must be analyzed at frequent intervals. It may be noted in this connection that, as with steel, the manganese determinations of various chemists show discrepancies which it is the duty of the chemists to clear up as early as possible. The hearth of spiegel furnaces is, more than that of any other kind of blast-furnaces, subject to changes, either by chilling or cutting, which require constant watchfulness. Under these adverse circumstances, the record of some of our spiegel furnaces is very satisfactory.

IN a month, the various colleges and universities throughout the country open, and young men who desire to enter a profession are beginning to look about them. Among the technical schools open to young engineers is Washington University, at St. Louis, where in the O'Fallon Polytechnic Institute, there are courses in civil and mechanical engineering, mining and metallurgy, chemistry, and building and architecture. The mining branch was organized in 1871, two years being devoted to special studies. The plan of instruction, as detailed in the catalogue just received, seems elaborate and quite exhaustive, and the students certainly have the advantage of being in the center of a district where varied mineral resources are worked with energy and success. The faculty includes Mr. CALVIN M. WOODWARD, Dean and Professor of Mathematics and Mechanics; Mr. W. B. POTTER, Professor of Mining and Metallurgy; Mr. C. A. SMITH, Professor of Civil and Mechanical Engineering; Mr. A. LITTON, Professor of Chemistry; and Mr. ALEXANDER LEONHARD, Instructor in Assaying. We understand that the Institute is very well equipped with laboratories, collections, workshops, etc.

GERMAN and Austrian engineers appear to be adopting with growing confidence the results of testing explosives advocated by TRAUZL. They use small cylinders of lead in which they drill a hole which is charged with the explosive to be tested. The expansion of the cavity furnishes a measure for the comparative power of a number of specimens of explosives. We note that manufacturers there are using this method largely to furnish figures demonstrating the superiority of their goods

and in various quarters consumers are urged to carry out such experiments themselves to aid them in choosing among the products of competing manufacturers. We note, however, in tables of this character published by a German concern, that the figures obtained in two trials of the same explosive, under what must be considered identical circumstances, often vary as much as they do between the products of two mills. Such a method of comparison is, therefore, to say the least, unreliable and unjust. Even if this method of testing did furnish accurate data concerning the comparative power of a given number of samples of explosives, the data would not enable the manager of a mine, or an engineer in charge of rock excavations, to choose the best for his purpose. The most powerful explosive is by no means in all cases the most effective or the cheapest. Practical experience, guided by a careful record of work done, must decide the question for given ground, and it does not then follow that its result is directly applicable to other cases. There is thus far no royal road in choosing the explosive of maximum efficiency, and the question as to which is best in any given case is affected, besides, by such items as cost in every locality, ventilation, facilities for transportation and storage, local prejudice, etc.

OUR special correspondent informs us, under date of the 11th, that the Denver Exhibition is rapidly approaching completion, the machinery section in which some exhibits were not yet in running order being expected to be ready in a few days. The headquarters of the ENGINEERING AND MINING JOURNAL and of COAL are located in the end of the west gallery, close to what is known as "Newspaper Row." Our representative, Mr. WILLIAM EGLINTON, will be happy to welcome any of the friends of the JOURNAL, and as he has already thoroughly familiarized himself with the Exhibition, will be able to give new-comers hints and advice that may prove of value to them.

Altogether, matters in Denver seem to be getting into good shape. The Denver circle railway, which runs from the business portion of the city to the Exhibition grounds, is expecting daily from Chicago a number of new open cars, and has made full arrangements for carrying a large number of people. We believe that on the one hand a number of the great trunk railroads, and on the other the managers of the Exhibition, are beginning to recognize the fact that the arrangements for transportation from the East do not do justice to either. It is reported here that the managers of the Exhibition are now making efforts to secure more reasonable rates; and if we may judge from the conversation of some of the officials of the railroads, they also are beginning to understand that it would be very advantageous to them to encourage visitors to Denver. We may suggest, in view of the fact that the Denver show was not fully completed until two weeks after the opening day—a fact which does not reflect upon its managers—that the day for closing the Exhibition be postponed for at least two weeks, and, if possible, for four. The gentlemen who are at the head of the enterprise possibly do not fully understand the ways of Eastern people. Many object to crossing the plains with the thermometer traveling about in the nineties. Others are still at the seashore or in the mountains, from which even business can not tempt them. Others will be soon returning from abroad. All of these people probably could not get ready to start for the West before the end of September; and as they are persons of influence, the managers of the Exhibition would do well to secure their attendance by an extension of time.

THE DUTY ON RAW AND MANUFACTURED COPPER.

We print elsewhere a letter from Mr. A. HARNICKELL, of this city, an acknowledged authority on all matters relating to copper interests. Mr. HARNICKELL seemingly takes exception to our line of argument. We hold that, if there is to be reduction on the duty of ingot copper, justice to the miners and smelters demands that manufacturers of copper goods contribute their share to increase consumption by lowering prices. Except possibly steel rails, no single article in our tariff schedule has been the subject of such persistent attacks as ingot copper. We need not discuss the merits of the case, nor attempt to correct many errors of the aggressive party. It seems a hardship that Western producers should be deprived of whatever benefit there is in the protection which Lake Superior mines have enjoyed for so many years. Still, the fact remains that copper has always been singled out for the attacks of reformers. If the discussions before the Tariff Commission should command any serious attention on the part of Congress, its recommendations, from the known tendency of some of its members, will probably be in the direction of lower duties. Prudence requires that copper producers should face this contingency calmly, and it will do no good to attempt to evade the issue by silence. They must insist that the sacrifices which they may be called upon to make shall not be borne by them alone. The only hope they have, if the duty is reduced, is, that they recoup themselves by greater output. The consumption of copper has grown very much during the last few years, and it is capable of very much greater expansion, in domestic appliances and decorative household furniture, if the price of such articles is reduced. In this the producers must have the co-operation, voluntary or enforced, of manufacturers. Some of the latter have already come forward asking that the duty on copper be reduced, while, at the same time, they have protested against any attempt to touch the protection they enjoy. We argue that, if there is any reduction, it must be a scaling down all around. So much for the argument in the matter which we attempted to place before our readers last week.

Mr. HARNICKELL holds that our present navigation laws have done much to injure the business of the copper rolling-mills by making copper and yellow metal sheathing practically free. We suppose that he means that, where formerly the shipping was American, whose bottoms were covered with American metal, the vessels doing our foreign carrying trade sail under other flags, and have foreign sheathing. This will be conceded so far as the foreign trade is concerned; but is it true of the large number of craft that do our great coast and West India trade? It is a notorious fact that the prices of sheathing, kept up by a combination of manufacturers, are so high that foreign vessels have repairs executed only when absolutely necessary, and we have been informed that for American craft they are a heavy burden. The copper rolling-mills of the country, as they are now situated, are entirely indifferent on the subject of the prices of copper, so long as they have the assurance that competing works pay as much as they do, because they add a given amount to the price for cost of rolling, together with a round profit. This price they firmly adhere to, and limit their production by the demand. They do not and will not ask for a reduction of the duty; but if it should be passed by Congress, they would continue the present system. The lower price at which they would be enabled to offer their goods would extend their trade and increase their profits to some extent, but entirely at the cost of the producers of raw material. Our point is, that they should contribute to an increase of consumption; and this could only be accomplished, as matters stand, by scaling down the duty on manufactured articles in proportion to any reduction in the duty on the raw material.

THE TAMARACK MINING COMPANY.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I notice, in the ENGINEERING AND MINING JOURNAL of the 5th inst., a letter from Mr. Charles E. Wright, Commissioner of Mineral Statistics for the State of Michigan, referring to a circular of the Tamarack Mining Company, a synopsis of which was published in your paper of May 27th last. The statement made by you in that publication, that the communication was received *from* Mr. Wright was erroneous. As you will see by the inclosed copy of the circular, we distinctly say that the estimates therein contained were received *by* him. Please make the necessary correction in your next issue, and oblige yours respectfully,

BOSTON, Aug. 16. A. S. BIGELOW, Treasurer.

THE DENVER EXHIBITION.

Special Correspondence of the Engineering and Mining Journal.

COLORADO.

CHAFFEE COUNTY.

Chaffee County, whose exhibit is intrusted to the care of Messrs. E. R. Emerson and S. E. Land, presents for inspection between ten and twelve tons of specimens, chiefly of argentiferous galena, gold, and copper ores. This county, comparatively young in mining affairs, has shown some strong veins in granite formation. The mining districts included in its borders are the Monarch, Chalk Creek, Cottonwood, La Plata, Hope, and Red Mountain. From the Monarch District, the Smith & Grey mine, which has recently come into the possession of General Tuttle, of Des Moines, Iowa, and associates, and which is now, I think, known by the name of the Madonna, sends some fine specimens. The Columbus mine, from the same district, is represented. The principal mines in the La Plata District that are represented are the Prince Albert, American Flag, and Mammoth. The Iron Chest, Rarus & Warrior, and the Murphy, in Chalk Creek District, and the Gladstone, from Cottonwood District, also send specimens.

CUSTER COUNTY.

This county's exhibit, consisting principally of specimens of ore from the Rosita and Silver Cliff districts, aggregates between six and seven tons, and is in charge of Mr. Stockmann. The well-known Bassick mine, of the Rosita District, sends some telluride of gold of a high grade. From the Ben Franklin mine, in the same district, there are specimens of argentiferous galena and of iron and copper pyrites. There are specimens of sulphate of barytes, from the Custer County Tunnel, in Rosita District, containing gray copper, iron, and copper pyrites; also specimens of the same class from the Silver Coin, Rosita District.

From the Silver Cliff District, the Bull-Domingo sends specimens assaying 75 per cent of lead and 60 ounces of silver to the ton; the Gray Eagle, specimens of argentiferous galena and iron and copper pyrites; the Copper Bottom, specimens of gray copper and blue and green carbonates of copper; and the Bonnie Lassie, specimens of molybdenite and chromate of lead.

GILPIN COUNTY.

The old reliable "Golden Queen," though the smallest county in the State, comes to the front with one of the largest exhibits in the building. The commissioner for the county, Mr. Thomas Manning, informs me that the county's exhibit aggregates about forty tons of ore specimens that have been gathered from seventy-five mines which are included in seventeen districts. Neatly arranged in several handsome show-cases, are

some beautiful crystals and specimens of iron pyrites, which are superior to any thing of like class exhibited. The largest piece of ore on exhibition is in this section, and was taken from the Tierney lode. When at the bottom of the shaft, it weighed ten tons, but was broken in raising, and now the largest mass weighs about seven tons. There are also on exhibition here pieces of ore taken from the Hidden Treasure lode at a depth of 1320 feet, the greatest depth of any mine in Colorado, though the California mine, in the same county, is within twenty feet of being as deep. There are also some fine specimens of free gold of great value taken from the Kansas and Gunnell lodes. In common with several other sections, this county shows some extremely valuable specimens of ore, one piece running $100,000 in gold to the ton, and another $20,000 in silver. The Powers mine sends some fine specimens of enargite, which, I believe, is only found in five places in the world.(?)

GUNNISON COUNTY.

In addition to the large pavilion in the Exhibition building, the commissioners for this county, Messrs. S. Richardson, Joseph Cotter, and Howard F. Smith, have erected commodious headquarters in the grounds a short distance from the main building. The following are the districts represented: Tin Cup, Pitkin, White Pine, Tomichi, Elk Mountain, Ruby, Crested Butte, Gunnison, and Cochetope. Of these, Tin Cup and Pitkin are the best represented, showing a fine lot of specimens. The county's exhibit aggregates about 100 tons, mostly of argentiferous ores and gold quartz, but including some iron ore and anthracite coal from Anthracite Creek and Crested Butte. There is a fine column of marble, and specimens of building-stones, including granite.

JEFFERSON COUNTY.

The display of this county consists mainly of building-stones, grindstones, gypsum, silica, etc. There is also a large chunk of coal obtained from near Golden, and specimens of copper ore from the Elk Creek mines.

LAKE COUNTY.

For originality of design, neatness, and general good taste in the classification and display of specimens, this county takes the palm, and much of this is due to Mr. N. W. R. Read, the energetic commissioner for the county, who designed and supervised the work. There are numerous features of interest noticeable, and not the least of them is a statement of the bullion production of Leadville, which is displayed on the wall a little to the left, and back of the cabinets containing specimens. From it, I take the following figures: The production from 1860 to 1873 (chiefly of gold from placers) was $6,400,000; during 1874, $145,000; 1875, $113,000; 1876, $85,200; 1877, $555,330; 1878, $3,152,925; 1879, $10,333,740.69; 1880, $14,187,697; 1881, $13,170,576; and for the first six months of 1882, $7,817,918.

The mineral specimens are arranged in cabinets, and bear neat labels showing the character of the ore, where from, value, etc.

Chrysolite.—Mounted on a large and handsome case is a complete map, showing the workings and contours of this property, the different levels being shown by different colors; also a number of vertical sections, showing the stratification and ore-chutes. Neatly arranged in a show-case under the maps is a fine collection of carbonate and galena ores and rocks from different sections of the mine.

Matchless.—This Fryer Hill mine makes a representation of a large number of free-milling silver ores. Large samples are shown that will run from 1000 to 2500 ounces of silver per ton; also a number of characteristic sands, all of which are high grade, running from 25 to 200 ounces, and several masses of horn-silver.

Iron Silver Mines.—The Iron Silver Mining Company displays a large series of sand carbonates in a number of bottles, arranged according to grade, which vary from two to 270 ounces of silver and from 10 to 73 per cent of lead. There are also shown some extremely fine masses of galena of great weight, and specimens of cerussite, with a general selection of carbonates from the property, and representing the geology of the mine.

Morning Star and Evening Star.—These mines show twenty-five different varieties of sand carbonates as shipped to smelters; they are of different colors and in different states of granulation. By far the most remarkable is a variety of gray sand, which is almost an impalpable powder, running 58½ ounces of silver and 73 per cent of lead. Another is a blue sand carbonate of lead, which probably contains some sulphate, and runs 20 ounces of silver and 65 per cent lead. It often occurs in compact masses. There is also a low-grade sand carbonate of lead that contains 70½ per cent lead and 9 ounces of silver. Of this, I am told, there are immense masses in the east workings of the Morning Star, one man being able to shovel a large number of tons per day, almost without using a pick. A large mass of galena is exhibited, for the purpose of showing in a definite manner the chemical changes from the galena to the sulphate and to the carbonate. This carries 70 per cent lead.

Leadville Consolidated.—The Carbonate mine makes a characteristic exhibit of the average ores of its mine and somewhat differing from the exhibits of other properties on the same hill. A gray sand carbonate from the 3d, 4th, and 10th levels is marked as running 439 ounces of silver and 58 per cent lead. Some ochreous carbonate of lead ore from the Shamrock mine shows fine incrustations of chloro-bromide of silver. Another specimen exhibits a mineral that is of unusual occurrence in the Carbonate camp. It is heavy-spar that carries some chloride of silver. In other districts, it is largely associated with lead ores.

Robert E. Lee.—This mine shows a fine collection of horn-silver, having a weight of 500 pounds and an intrinsic value of $4500. In a glass case, there is shown a large silver block representing $118,500, or 17½ hours' output of this mine. This case also contains two silver bricks, one of which, weighing 1833 ounces, 945 fine, and valued at $2412.86, is the product of 183 pounds of ore; and the other, weighing 1744 ounces, and being 939 fine; also a large block of amalgam just as it is squeezed out, and a silver retort or spongy silver produced by driving off the mercury. Every class of ore, from low grade to the richest in the mine, is represented. Complete chemical analyses have been made of them.

Silver Cord.—This Iron Hill mine presents a fine series of carbonate and galena ores, with collection of rocks and minerals representing the geology of the mine. Some fine crystals of embolite that are small but remarkably perfect are noticed, also a number of specimens of beautifully marked kaolin of all colors. An ochreous carbonate of lead ore that has been broken open shows on the face a large number of white scales of carbonate of lead.

A number of other properties make extensive and varied exhibits, among them the Little Pittsburg, Little Chief, Dunkin, and Amie of Fryer Hill, which make representations of their galena and chloride ores; the Mike & Starr, Breece iron, and Park mines on Breece Hill; and the Henriett, Cyclops, Wolfe Tone, Yankee Doodle, Big Chief, and A. Y. mines on Carbonate Hill.

BOULDER COUNTY.

This county makes an exhibit of the telluride ores for which it is noted. The Prussian and Slide mines, of Gold Hill, send each a ton of ore from the 300 and 600-foot levels, including not only specimens of rich ore, but 800 and 1000-pound chunks, showing two and three feet of pay. Most of the telluride ore, shown in fifteen cases, assays from $15,000 to $50,000 per ton; and the Golden Age sends samples of native gold quartz valued at $8000. Some fine silver ore, taken about a week ago from the 1000-foot level, and assaying 7000 ounces in silver per ton, is sent by the Caribou mine; while the Poorman and Blue Bird mines contribute an equal amount.

The entire exhibit for this county consists of about 15 tons of ore, representing 200 different properties. The districts represented are the Ward, Central, Sunshine, Magnolia, Sugar Loaf, Gold Hill, and Grand Island.

NEW MEXICO.

At present, this territory is represented by about eight tons of specimens, though, when the entire lot is received, the representation will aggregate 12 tons. I am indebted to Mr. William B. Sloan, of the *Santa Fé New Mexican and Mining News*, and commissioner at large for the territory, for much information regarding its resources. The *Mining News* displays a cabinet containing a great variety of mineral specimens from every section of the territory. Among the most perfect of these may be noted specimens of black sulphurets, sulphate of barytes, native silver on slate, green and also yellow chloride on slate, and silver glance. Differing from many of the pavilions, the specimens from this territory are generally small; and as each specimen represents a mine, there are over one thousand mines represented. There are also numerous specimens of various classes of copper ore contained in this cabinet; among them red oxide of copper, sheet-copper, sulphide of copper, malachite, azurite and malachite combined, hirsute malachite, moss copper, and peacock copper. There are also specimens of sulphide of copper from the property of the San Pedro & Cañon del Agua Company, and green malachite from the Hanover mine in Grant County, which was worked three hundred years ago. There are also displayed black oxide of copper ore carrying wire gold, agatized wood, chloride of silver, and last, but not least, some remarkably fine specimens of anthracite coal, which is found throughout the territory. On one stand, the specimens from Socorro, Dona Ana, Taos, and Lincoln counties are displayed; on another, Grant County; and what is now an empty space will be filled with ore and bullion from the Lake Valley mines. The exhibit of the territory contains many features of interest besides the mineral specimens, and is well worth an inspection.

IDAHO.

This territory, whose specimens are in care of Mr. James L. Onderdonk, is represented by over five tons of ore, mostly silver-bearing. The Jay Gould, Mayflower, and Bullion mines in the Wood River country, send specimens of gray copper, galena, and native silver. The Pilgrim mine, in the Saw Tooth region, sends some ruby silver specimens. From Yankee Fork, the Charles Dickens, Montana, and Custer mines send specimens of free-milling gold; and from the Bay Horse District, the Ram's Horn, Excelsior, and Beardsley send some high-grade silver ore. The other districts represented are the Wieser, Heath, Owyhee, Warren, Shaw's Mountain, East Fork, and Atalanta. CHIEL.

THE BELL, BUTTE, MONTANA.

Special Correspondence of the Engineering and Mining Journal.

Stockholders in Butte mines, local as well as from the East, have manifested much interest in the Butte letter which appeared in the ENGINEERING AND MINING JOURNAL of the 29th ult. Several unscrupulous manipulators have given vent to curses not loud but deep. It so happens that there are now in Butte several Eastern investors, who are largely interested in the mines of this district. They are glad to find a fearless organ of the truth in the ENGINEERING AND MINING JOURNAL. The great trouble with local mining papers in all Western camps—and a trouble not easily to be avoided—is, that local patronage, and the influence of local magnates, can not fail to dwarf and often suppress the true state of affairs of local companies. Fortunately for Butte, in its history so far, there has been and is but little which such considerations have suppressed, and this is due to the meritorious management and genuinely good results of the operations in mines stocked and unstocked.

In my last letter, mention was made of the eleven leading stock companies of this district. In regard to the Alice, of which particular mention was made, subsequent events have not changed the accuracy of the statements then made.

The history of the Bell Mining and Smelting Company, which owns one of the best copper and silver mines in this district, illustrates well the too frequent results of the organization of over-capitalized and mismanaged mines in the West. Experts, as well as practical homespun miners, agree in pronouncing the Bell to be as fine a mine as is known in Montana or Idaho. It is but a short distance northeast of the town limits of Butte, in one of the remarkable copper-silver belts which run east and west along the hill north of the town, and the formation and limits of which are studies for geologists. There is a series of these east and west veins, the northern belt being that on which the Alice and Magna Charta locations are situated. In this northern belt, no copper ores have been found. In the belt next south of this, coming toward Butte, are situated the Lexington and other silver mines of recognized productiveness; but still no copper is found. A few hundred feet farther south, comes a copper-silver vein on which the Bell is located; and a few

hundred feet still farther south, another copper-silver vein, the copper ores being now found all the way across the hill-side. In the belt on which the Bell is located, the copper ores extend only so far to the west and then stop, running east as far as the formation can be found. The ores of the Bell mine are as handsome to the eye as any that are known anywhere. Native silver on copper sulphurets and "peacock" copper are taken out in profusion. The mine was originally owned by one or two old-timers in Butte, and would not now be a matter of public interest if it had not been bought for speculative purposes by third parties, and stocked for $4,000,000, the shares $25 each, and now largely owned by Eastern capitalists, who have bought on the strength of the real merits of the mine, and not expecting the subsequent unfortunate management, to say the least, of local promoters and directors. The mine was originally bought and stocked as a speculation, by Mr. C. T. Meader and one or two others, the purchasers having no capital. The title was put in the hands of a trustee, who was to transfer to the original vendees, or to subsequent assignees of shares, the certificates of stock just as fast as the inside price for said shares should be paid over to the trustee. The proceeds of such sales of stock were turned over to the original owners of the mine, then undeveloped, as fast as collected by the trustee, until the purchase price of $100,000 was paid to the original owners. Then, of course, the title to the mine became absolute in the directors of the company. Sales of stock continued to be made at prices ranging from 50 cents to $1.50, until there was a small working capital in the treasury. Friends of the promoters of the new company got shares at 50 cents and up, others paying a dollar or more. At this time, there were two shafts, 80 feet deep, and a 40 and an 80-foot level, in the property, and a great deal of high-grade, free-milling ore had been taken out. The new company immediately began developments, and there are now two shafts, at a distance of 250 feet apart, each 300 feet deep, with levels. A large quantity of first and second-class, and a very large quantity of third-class ore, suitable for concentration, has been opened up. But bad management and lavish and unnecessary expenditure have finally driven the company into great pecuniary straits, put a large balance on the wrong side of their account-books, and forced the employés and miners to close down the mine and smelter, and temporarily suspend operations. The management, under the direction of Mr. C. T. Meader, the original promoter, was both unfortunate and incompetent from the first. The smelter, having a capacity of 50 tons, was built before the treasury had a balance to its credit. Supplies and machinery were purchased at prices 25 per cent greater than those charged other more prudently managed companies. The equipment of the mine and smelter was done on a credit basis, under these circumstances. As notes became due, payment was deferred, by renewals and otherwise. Last winter, Prof. S. M. Pitman, representing Boston capital, put $60,000 into the treasury, taking a second mortgage on the smelter and mine. the former having been originally mortgaged for the cost of its erection. For a while, heavy shipments of matte were made, and fine ore continued to be extracted from the mine. But obligations could not always be deferred, and wasteful management exhausted the funds in the treasury. A few weeks ago, one creditor attached the mine and smelter, and all the others followed suit, stopping operations. At last, reorganization has been effected in the company; and if a fine mine can make a successful mining company, handsome results may be expected from good management in the future. The mine and its output remain unchallenged. But what can be expected from a management which, as in this case, employed and paid eighty miners to do the work of forty? More of this anon.

BEAU.

BUTTE, MONTANA, Aug. 5.

THE COPPER TARIFF.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: In your last issue, the protection for sheet-copper is pointed out as productive of good profits to the rolling-mills. If it were so, the commonwealth certainly would not suffer from it. Coppersmiths only would have a right to complain, or, what for them is absolutely easy, to build rolling-mills of their own. They do neither, because they are satisfied that they are as well served now as they could serve themselves. The cost of rolling in this country, as required by coppersmiths here, is 4 cents per pound: our mills do not work for the Hindostan trade. Ultimate consumers find that coppersmith-work here, all told, is as cheap as in Europe—better by far, because it is very much lighter; but reinforced on principles of dynamics which the slow-coach craft in Europe has not the genius to learn.

But your assumption that the copper rolling-mills are or ever were favored or benefited by the tariff is an error—an error which it would be easy to fall into when reading only the copper paragraph of the tariff. It was before the enactment of the tariff that these mills made money, not after. I will explain. The chief production of these mills in the past has been for sheathing for vessels, both of pure copper and of yellow metal.

The tariff makes both these articles practically free, and the mercantile marine uses foreign copper and foreign yellow metal, canal-boats excepted, which require none.

Let this free clause be repealed, and the mills would not much care for the rest. Or, if it is impossible to teach legislators by demonstration, if they can not see that this intended benefit to ship-building and navigation was conceived in error, at least allow these rolling-mills to have copper and spelter for sheathing purposes free: give them an equal chance with English rolling-mills.

American ship-building, I opine, will never be stimulated by the poetical chagrin of missing the flag on the ocean; for the bombardment of Alexandria, which was a rude reality, never affected the government or Congress. It was stimulated and built up in days past by the work and wages and drawing of materials and supplies from home, not from abroad. Local history proves this; and I am free to predict that your own JOURNAL will, in a very few years, entertain its readers more about ships being ribbed and rolled to order in Pittsburg than about mines. Truly,

A. HARNICKELL.

NEW YORK, August 16.

PYRITES DEPOSITS AND THE USE OF PYRITES IN THE MANUFACTURE OF SULPHURIC ACID.—II.

* The 500,000 tons of pyrites imported into Great Britain are first burnt for the utilization of the sulphur; the resulting cinder is then crushed, roasted with salt, and leached for the extraction of the copper; and the residue from this operation, having thus been deprived of sulphur and copper, and being absolutely free from phosphorus, is used in its disintegrated state for fettling, or pressed into blocks for making Bessemer pig in the blast-furnace. Every ingredient, therefore, of the original ore is turned to account, and thus each, though in itself insufficient in value to be exported from Spain, becomes highly remunerative to the purchaser and to the seller. For instance, a high price for the sulphur in the ore is 10 pence per unit, though at times it falls to 6 pence or 12½ cents per unit, when a ton of sulphur in the ore costs the acid-maker only $12.50. The copper in the cinder is generally worth about 8 shillings per unit, or about 20 shillings per ton, and the resulting blue-billy brings from 9 shillings to 18 shillings, according to the state of the iron market. The average value, therefore, to the miner of a ton of crude pyrites in England is for the

Sulphur	$7.50
For the copper	5.00
For the iron	2.50
	$15.00

Only the low price at which the sulphur, owing to its association with other valuable ingredients, can thus be offered, induces the manufacturer to prefer it to brimstone; while at the same time the very low price at which he is enabled to make acid permits him to buy South Carolina coprolites, convert them into superphosphate, and ship them back to this country. It is evident, therefore, that the pyrites question is one of paramount importance to our acid-makers; and Dr. Lunge's book is the best guide toward the solution of the technical problem. It describes minutely the most approved kilns for burning lumps and the various furnaces used or only proposed for burning fines, and it possesses the cardinal merit, which so generally distinguishes German technical treatises from English, that the illustrations are all working designs drawn to scale. It likewise gives fullest instruction for managing the kilns, and lays down judicially the advantages and disadvantages of the use of pyrites as compared with brimstone. The advantage is confined to the low cost; but this is so great that it more than compensates for the drawbacks. These, however, are considerable. Pyrites kilns are far more costly and cover more ground than brimstone-burners capable of oxidizing the same quantity of sulphur. The gas evolved from burning is about one quarter to one third less dense than that from sulphur, and requires therefore a correspondingly greater chamber space, and the durability of the chamber itself is less when using pyrites than when using brimstone. Per unit of sulphur in the material burnt, brimstone yields a higher percentage of acid than pyrites, and the arsenic which invariably accompanies pyrites vitiates the acid and consumes niter. Add to these drawbacks that the labor cost is about three times greater when burning pyrites than when burning brimstone, and it becomes evident that the ore must be very cheap or brimstone very dear before the former can compete advantageously with the latter.

The cost of the sulphur in the Spanish pyrites is, however, such that the ton of chamber-acid, 140° Twaddel or 62° B., with pyrites even at 19 shillings per ton, is estimated as follows:

	s.	d.
·758 ton of pyrites (equal to ·364 ton of sulphur) at 19s. per ton of pyrites =	14	4
·0145 ton of niter at £11	3	2
0·25 ton of coal at 4s.	1	0
Wages	3	6
Repairs	0	6
Renewal of chamber	1	0
	£1	3 7 = $5.71

The recent rise in the price of brimstone here has very imperatively called the attention of the manufacturer to the pyrites question, and excited a demand for pyrites. Whence will come the most economical supply is as yet uncertain. Canada is competing with Spain, and some acid is made from home-mined ores; and a beginning having been made, the result of skillful manipulation is dispelling the prejudice which earlier and ill-conducted attempts raised against the use of pyrites.

Under Mr. Monnier's direction, pyrites from Copperas Hill Mine, Vermont, was burnt in Boston, and ore from Virginia in Camden, New Jersey, in long Spence muffles, with the view to sulphatizing the copper they contained by means of sulphate of soda and of simultaneously utilizing the sulphur evolved. It appeared difficult to attain both ends at once. The muffle, yielding, as it does, weak gas, is not an economical calciner; and the Copperas Hill ores, carrying a large percentage of pyrrhotite, did not burn well. Neither attempt was likely to result in such success as to enlist public favor on the side of pyrites. As far back as 1870, General Adams, the manager of the Hartford Company's copper mines near Lennoxville, P. Q., after organizing companies to make acid from the ore, in Quebec and London, Ontario, erected works at Bridgeport, Conn.; but for some reason, his acid fell into ill repute among the copper and brass workers of the Naugatuck Valley, who would have been his best customers. They claim that it discolored their metal, and the use of pyrites was abandoned.

Another unsuccessful enterprise was at the Highlands on the Hudson, where a very arsenical pyrites quite barren of copper, but carrying a little nickel, was burnt for acid. The works languished from the first from inherent weakness. Messrs. Pope & Cole, at Baltimore, contemplated for a time using the sulphur from their copper mattes for the manufacture of acid to be used in their blue-vitriol works; but they soon abandoned the waste gases in favor of brimstone. The coarse metal derived from smelting copper ore usually carries under thirty per cent of sulphur and yields to the acid-chamber not over twenty per cent in a gas of only five and a half per cent volume of sulphur; while the copper mattes, carrying lead, of which considerable quantities are made by the lead furnaces of the Rocky Mountains, and treated on this coast for their

* A Theoretical and Practical Treatise on the Manufacture of Sulphuric Acid and Alkali with the Collateral Branches. By George Lunge, Ph.D., F.C.C. Vol. I. London: John Van Voorst. 1879.

copper and silver, part very reluctantly with their sulphur, and yield a gas poorer still.*

These several abortive attempts, however, could not contradict the evidences of success from every manufacturing center in Europe; and therefore, urged by the stimulus of the high price of brimstone, three or four large works in the East have within the last eighteen months accommodated their plant to the use of pyrites, and small works have been built in Atlanta, Ga., to manufacture pyritous acid. Two of the Eastern works draw their supply from the same group of mines in Eastern Canada as furnished ore to the Bridgeport Works ten years ago; the third works receive their ore from the Rio Tinto Company, which company (or an offshoot from it) is building in Elizabethport both acid and copper reduction-works, as though confident that it can secure a market in this country for its Spanish ores. And in truth, when freights are low, Spain is commercially nearer this seaboard than some inland points not as many hundreds as it is thousands of miles away. But this is the case only when freights are low, while the Canadian ores can be delivered at fixed freight rates—an enormous advantage, if the rates be low enough. The Spanish ore has, on the other hand, the advantage over the Canadian of being richer in sulphur and iron. Both are about on a par as to copper contents, the advantage, if any, being with the Canadian.

The same primitive slates which carry the pyrites in Spain and Canada give their rugged character to the scenery of Vermont and New Hampshire, and enrich those States with their characteristic minerals. Heavy beds of cupriferous pyrites are mined at Copperas Hill and the Ely copper mine in Vermont; but the ores contain too much magnetic pyrites to burn well. From near Lisbon, N. H., there is promise that a good ore may be procured. Mr. Bartlett, in the number for July 15th of this JOURNAL, described his pyrites mine near White Mountain, N. H. Pyrites is also mined at Charlemont, Mass. But as yet no mines in the Eastern or Middle States have been opened from which an assured yield of sufficient quantity can be counted on. The granular pyrites burnt by the New Jersey Chemical Company, at Camden, for years, came from Tolersville, Louisa County, Va., where there seems to be a large deposit of partly granular, partly compact pyrites, remarkably free from silica, but not uniformly cupriferous. But the quantity is probably small compared with the huge beds in Carroll County, near Hillsville, Va. Here, however, the free-burning pyrites is more or less contaminated with pyrrhotites. But on further exploration, it may be found that over certain areas the free-burning pyrites will preponderate, and that the copper which accompanies the pyrites will in places also be found concentrated to a profitable grade. These masses are, I think, the largest yet discovered in the country, and are within fifteen miles of the Virginia & Tennessee Railroad. In the progress of time and manufacturing, such vast stores of pyrites, lying not far from the salt springs of Washington County, Va., may supply materials for a great soda industry, whose products will be used in saponifying the fats of Cincinnati and the West. But a more immediate demand for acid exists to convert the coprolites of South Carolina into superphosphates; which might, perhaps, be profitably done at some such point as Norfolk, midway between the phosphates and the sulphur. But the supply for this purpose will not improbably come from the same rocks which contain the pyritous beds of Virginia, and which extend through Northwestern North Carolina and Tennessee, where they have supplied with mineral the Ore Knob and Ducktown mines, into Georgia and Alabama, where the Stone Hill and other mines prove that these old slates are everywhere associated with sulphureted ores. The Tallapoosa Copper Company is at present supplying acid-works in Atlanta, Ga., with pyrites, and it is to be hoped that this is but the small beginning of a great industry.

The foregoing enumeration comprises the principal native sources of pyrites. Dr. Lunge expresses surprise that the large and widely-found beds of cupreous pyrites (mentioned in Goldschmidt's Austrian Report of the Philadelphia Exposition) in Vermont, Missouri, Lake Superior, Tennessee, Virginia, etc., have not found any similar use to that of the Spanish and Norwegian pyrites, and adds that "this can be only a question of time."

The properties of a pyrites suitable for economical acid-making are so strictly limited, and, if it has to be transported for any distance, the presence of other valuable ingredients whose sale will reduce the cost of the sulphur are so necessary, that it is not likely that many mines will be opened whose ores will compete with those of Spain, which in Europe have driven almost out of the market the ores of Wicklow, Ireland, of Norway, and of Belgium.

The same care as to details, with which Dr. Lunge describes the construction and management of pyrites-burners, he bestows on the erection and working of the lead chambers and on the Gay-Lussac and Glover towers. He is particularly minute in his discussion of the merits of the latter, which he was one of the first manufacturers to recognize the value of and to adopt. It certainly perfects the chamber method, which it had taken a century to develop. Until the first decade of this century, the sulphur was burnt inside the chamber, and the acid-making operation was intermittent. Early in this century, the sulphurous acid was first introduced in a continuous stream. The second decade witnessed the adoption of the steam jet and the practical perfecting of the acid-making stage of the process. Subsequent ingenuity has been directed chiefly to improving the construction of the burners and to devising means for reducing the consumption of niter. The most important and successful contrivances for the purpose have proved to be the Gay-Lussac and Glover towers, the former employed to absorb the fumes of nitrous acid escaping from the last chambers; the latter, to liberate this acid and restore it to the first chamber, that it might recommence its oxidizing progress. The two inventions are subsidiary one to the other.

It is found practically impossible so to balance the supply of steam to the sulphurous acid gas and nitric acid that there shall be no escape of either of the valuable reagents. Only in the presence of a large excess of nitrous gas in the last chamber is all the sulphurous acid oxidized, and this excess can not be maintained without great waste of niter. To allow of this excess, Gay-Lussac, in 1827, proposed to dissolve the escaping nitrous acid in sulphuric acid, by bringing the ascending column of the gas into contact with a descending stream of acid in a coke-tower.

Nitrous acid (N_2O_3) and probably hyponitric acid (NO) combined with sulphuric acid to form nitro-sulphuric acid ($SO_2(OH)NO_2$), the same compound which when isolated forms chamber crystals. These crystals are soluble in the cold without decomposition in acid of specific gravity 1·55° to 1·70°.

When such a solution is diluted below 1·5°, decomposition and the evolution of niter compounds take place. Decomposition may, moreover, be effected by the action of sulphurous acid,

$$2SO_2(OH)NO_2+SO_2+2H_2O_2=3SO_2(OH_2)+2NO.$$

If therefore the nitrous acid fumes escaping from the last chambers are arrested in the Gay-Lussac tower by a properly graduated quantity of concentrated sulphuric acid, there flows from the tower a strong nitro-sulphonic acid which in practice should not contain less than 1 per cent nor more than 2½ per cent of N_2O_3; and the gas escaping from the tower should be practically free from sulphur and niter compounds.

To liberate the nitric from the nitro-sulphonic acid and utilize it in the chamber, Gay-Lussac proposed to interpose another tower between the sulphur-burner and the chamber, in which the decomposition of the tower acid should be effected by the joint agency of steam and sulphurous acid. This apparatus and the shelf *dénitrificateur*, in which decomposition was effected by the same reagents, differently applied, failed to receive general acceptance, chiefly because they diluted the acid and in diluting it generated more or less free nitric acid, which attacked the lead lining of the tower and rapidly destroyed it. Other contrivances, such as steam towers, cascades, Woulfe bottles, have been and are employed; but none being free from many objections, retarded the universal adoption of Gay-Lussac's admirable invention.

In 1859, John Glover, of Wallsend, built a tower in which he used the kiln-gases, but without steam or moisture, to effect the decomposition of the nitro-sulphonic acid. Although he did not encumber his invention with any patents, it made way but slowly against the indifference of most, and the opposition of some, manufacturers. In England, it had been generally introduced before 1870. It was not even known on the continent of Europe until 1871, when our author first explained its advantages to the European manufacturers through *Dingler's Journal*, and its capabilities are not yet fully understood and appreciated in this country. In few works does the Glover tower stand in its proper place between the burner and the chamber, acting both as a denitrator and a concentrator. One objection raised against it is, that at a high heat, when nitro-sulphonic acid is decomposed by sulphurous acid, nitrous oxide, and even nitrogen, are set free, causing a loss, as Kuehlmann and Vorsten contend, of from 40 to 70 per cent of nitrous compounds, while others fear that the burner gases, if introduced directly from the tower into the chamber, will be too hot.

The chapters in which Dr. Lunge fully refutes these grave objections are well worthy the study of American manufacturers. He shows that the temperature at which the most active decomposition of the nitro-sulphonic acid takes place, at the head of the tower, is from 50° to 80° C.; that of the acid running from the tower, 120° to 150°. The lowest temperature is therefore not above that at which the gases should enter the chamber; the highest temperature is below that at which nitrous oxide or nitrogen would be produced from the action of sulphur and air. By passing the total production of the chambers through the tower, this low temperature of the escaping gases is obtained, while, by admitting the full flow of hot burner gas, the temperature at the base is raised to such a degree that chamber-acid, introduced at the top, as weak as 1·06° specific gravity, flows out at the bottom concentrated to 1·44° to 1·52°. The mixture in the tower of the nitro-sulphonic acid, with the whole production of chamber-acid, aids, by diluting it, the decomposition of the former. The necessary addition of nitric acid, or of a solution of niter, is also now generally made through the tower, and that with an admitted saving of niter.

The Glover tower is the last very important novelty in the domain of acid manufacture.

The old methods of purification and concentration have not been succeeded by any other of recognized merit. The only notable change in the concentration apparatus is the substitution of Faure and Kessler's stills of lead with platinum bottoms for stills entirely of platinum. To compete with these, Johnson & Mathey, of London, and Desmoutis, Quennessen and Lebrun, of Paris, now manufacture platinum stills, in which Faure and Kessler's idea of working with a thin layer of acid heated from below only being adopted, the least possible platinum is used elsewhere than in the bottom. A four to five-ton platinum still, with corrugated bottom and a heating surface of 3 feet by 1 foot 6 inches, with overflow, cooler, metal rim, etc., is now sold by Johnson & Mathey for £1000.

The work ends with a long and interesting chapter on the by-products of sulphuric acid manufacture, foremost among which in England is the copper extraction in the wet way from the desulphurized pyrites, as already pointed out.

J. D., Jr.

* Nevertheless, in his interesting lecture published in this JOURNAL, Mr. Vivian, of Swansea, states that, by the skillful use of the Gerstenhoefer furnace, he has turned to use in his acid-chamber forty-seven per cent of all the sulphur which enters his works, whether as ores or mattes.

THE MANUFACTURE OF ARTIFICIAL FUEL FROM ANTHRACITE DUST AT PORT RICHMOND.

In response to an invitation by Mr. E. F. Loiseau, of Philadelphia, we visited the works of the Loiseau Fuel Company at Port Richmond recently, with a view of giving the readers of *Coal* the first published description of both plant and process. We may say, in justice to Mr. Loiseau and to ourselves, that we made our observations independently, and were given every opportunity to examine all the details closely.

The works are located at Port Richmond, a suburb of Philadelphia, in close proximity to the Delaware River, and near the coal docks of the Philadelphia & Reading Railroad. For the receipt of raw material and the delivery of finished product, they are, therefore, well situated; but in other respects, the location possesses drawbacks which have entailed inconveniences, and which involve complications unfavorable to continuous and regular working. These difficulties Mr. Loiseau had to overcome by increased appliances and great care in management. The land in the vicinity of the works is low and moist, the consequence being that the lower portions of the large pile of 8000 tons of anthracite on hand are wet, while the upper portions are drier. In cutting away from the pile,

there is obtained alternately and irregularly, through slides of the upper portion, dry and moist lots of coal. As it is absolutely necessary that the dust be dry before use, the drying apparatus is irregularly taxed, and its delivery to the machinery can therefore be made regular only through the intervention of considerable storage capacity, and by the exercise of constant watching. The storage capacity of dried fuel is limited by the circumstance that it must be delivered to the presses with a certain temperature. We mention this fact because it is a feature influencing this special plant, though, of course, it is not an inherent drawback of the process. When the special cause is removed, which circumstances do not permit in this case, no trouble on that score need be anticipated, as storage of the dust in bins or sheds on dry ground, when delivered to the works, would act like a fly-wheel in a steam-engine in regulating fluctuations. There is another point which merits attention, as affecting the working of the Port Richmond plant. The exigencies of space in experiments with processes now discarded demanded that the presses be placed high, and consequently, we find the press, the heaviest piece of machinery, placed at an altitude of 38 feet, thus involving the lifting by elevators and otherwise of all the raw materials. The advantage of being able to deliver the pressed fuel on a level to the market storage bins is far from counterbalancing the drawbacks. We need hardly add that in new plants all the machinery could be brought much nearer to the general level of the works. We feel justified in saying that it is highly creditable to Mr. E. F. Loiseau to have accomplished what he has in the face of such difficulties, aggravating the many troubles incident to the elaboration of details in putting an experimental plant to regular work.

The coal pile is located at a distance of 250 feet from the main building, which is 40 feet long, 40 feet wide, and 55 feet high. An inclined plane, provided with a small Williamson Brothers hoisting-engine, carries the coal cars (capacity one ton) to the level of the hoppers of the drying apparatus, the top of which is fourteen feet above the general level. The drier is a brick oven fired by four grates, and contains two sets of revolving drums. In each set there are four drums, 2½ feet in diameter and 18 feet long, placed in sets of two, one above the other, the uppermost set delivering into the one beneath it. The drums are rotated at a speed of 10 revolutions per minute, and the whole plant has a capacity of 100 tons per day of 10 hours. With the anthracite dust is charged into the hoppers simultaneously 8 per cent of bituminous coal, which, in traveling through the drying drums, is thoroughly and intimately mixed with it. The temperature of the dust, as it is delivered by elevator buckets to a storage bin placed above and back of the press, is about 140 degrees Fahrenheit.

Thus one part of the raw material is ready for the press. In order to render it plastic and put it into a condition fit for pressing, Mr. E. F. Loiseau adds eight per cent of pitch in a melted condition. On the general level, in a building apart from the main building, is a furnace containing two wrought-iron tanks, eight feet long, four feet wide, and four feet deep, holding each 2800 pounds of pitch. They are heated by fireplaces beneath them. Between these two tanks, and below them, but connected with the bottom of both by a pipe, is a retort-shaped vessel having a capacity of 700 pounds of pitch. Its upper portion is connected with a steam pipe, while near its bottom is the opening of a two-inch pipe which leads upward to the vicinity of the press. When pitch is needed, the contents of one of the tanks is allowed to flow into the retort, and after communication has been cut off, steam is admitted to the latter, which forces the pitch into the pipe which leads to the press. This pipe is inclosed in a three-inch pipe, the space between the inner and the outer one being kept full of steam, thus keeping the pitch hot. The pitch flows into a steam-heated tank near the press, a valve being supplied at its bottom to tap it off when required into a dumping bucket suspended on wheels from an overhead track. A varying quantity of coal-tar is added to the pitch to give it the right temper, the test being that when cooled the pitch will just admit of its being indented. When the press is ready for a charge, 920 pounds of coal-dust are drawn off into a car just holding that amount, and are dumped into a receptacle back of the press, in which revolve two shafts specially arranged, sixty cast-iron blades set one inch apart. Simultaneously a dumping bucket full of pitch, having a temperature of about 180 degrees Fahrenheit, is added, and when it has been thoroughly incorporated, which is quickly done, the plastic mass is dropped and is carried forward by two longitudinal conveyers, eight feet long, to the distributor of the press. The bottom of the conveyer casing is removable, so that in case of need, should the first charge accidentally not have the proper consistency, it can be dropped into a chute, taking the mixture out of the way. The plastic mass then reaches a receptacle, which is provided with an ingenious feeding arrangement. Below the latter is a stirrer, similar to the first, but smaller and running faster, from which it goes to the press proper. The press consists of a pair of rolls of chilled cast-iron, two and a half feet in diameter and three feet wide, running at a speed of four revolutions per minute. These rolls are made of a number of rings, six inches thick and six inches wide, slipped over the rollers, which are hollow, so that they can be cooled by water. The entire surface of the rolls is covered with a series of oblong holes, which constitute one half of the molds. Near the edge of the rolls where there is, in alternate rows, no room for one of the larger molds, smaller ones are provided, so that there are in all 870 large and 56 smaller molds, each of which in one revolution of the rolls turns out a small oval-shaped piece of fuel, weighing about two ounces. Thus, when running at a speed of four revolutions per minute, the capacity of the machine is twelve tons per hour, or 120 tons per 10 hours, allowances being made for stoppages, etc. The record of continuous running has shown an output of 96 tons of fuel per day. Between each two adjacent molds on the rolls, a little groove is cut about ¼ inch wide and ¼ inch deep. This space acts like a safety-valve in giving relief when any portion of the rolls happens to have been fed with too much mixture. The details of feed, pressure, consistency of the mixture, etc., have been so accurately worked out that the machine works without any perceptible jars and concussions, which otherwise so invariably accompany rolling machinery. We have watched the press with the closest interest, well knowing how difficult it is to avoid dangerous shocks. We confess that before seeing the machine we were slightly skeptical on this point. But its quiet working, under what must be considered a heavy duty, have dispelled our doubts. This success must be chiefly attributed to the nicety with which the feed can be regulated and controlled, and to the general excellence of the press in all its details, it being a beautiful piece of workmanship, reflecting credit upon both the designer and the builder. The fuel itself drops from the press along a chute to a wire belt conveyer about 56 feet long and 28 inches wide. It is so hot that it can hardly be kept in the hands long, and when in that condition can be broken by the application of some force. The balls are carried along in a steady stream, the small connecting pieces which gatherin the grooves between the molds being screened off. From the first conveyer they slide upon a second 40 feet long, and at one point pass under a series of jets of water which cool them completely. At the end of this conveyer the fuel drops on a screen so arranged that it can be set to deliver to both sides of the conveyer into a chute, under which stands a car. Along the greater part of the length of both sides of the two conveyers run two tracks above a series of bins. At the time of our visit, these bins were full of fuel, and the balls were being run by a chute to the outside of the building. In the great heaps accumulated, one piece was like the other, and we noticed none that was broken. We dropped pieces from a hight of 40 feet, to a wood floor below, without their breaking. The screenings are used under the boilers, and in the fires around the works. Steam is supplied by three boilers, and power by a very fine horizontal engine, having a 16-inch cylinder and 36-inch stroke, running at a speed of 60 revolutions per minute. This engine is rated at 75 horse-power. Altogether, aside from the general arrangement which circumstances dictated, the plan of the plant shows a high degree of skill. The mechanical details are so carefully and successfully worked out that we agree with Mr. Loiseau when he claims that the experimental stage has been passed, and the manufacture, so far as the technical points involved are concerned, is a full success.

We do not profess to be able to judge by a day's visit whether or not the process is capable of competing commercially with unprepared fuel. We feel competent, however, to speak with some show of authority on the question of the quality of Mr. Loiseau's artificial fuel. We have on a past occasion watched it when burning in an open grate, and have seen it when used under steam boilers; and far from noting any drawbacks, such as obnoxious smells, etc., have observed that it furnishes a clean, bright fire, and is remarkably free from clinker. We can not help believing that the purest and best fuel attainable would be made if the dust were washed before being used. How far the cost of such a process and of the subsequent drying would weigh against the enhanced price attainable for what may well be called an ideal domestic fuel, we are unable to say. With the dust from many mines, such an attempt would, of course, be like trying to gild gold.

We can not close our record of our brief visit without expressing our admiration for a man who has, through many financial and technical difficulties, aggravated by threatened catastrophe to his eyesight, undauntedly, and cheerfully almost, pursued his object. For the benefit of the community at large, to whom what hitherto has been a waste product is made available, as well as for the benefit of Mr. Loiseau himself and his faithful associates, we trust that the rewards of his work will be bountiful.—*Coal.*

RAILROAD NEWS.

A dispatch from Denver, August 8th, says: The president of the Denver, Utah & Pacific Railroad Construction Company has filed a petition in the district court for the appointment of a receiver for the Denver, Longmont & North-Western Railroad. The latter road is eleven miles long, running from Longmont to Mitchell's coal mines, and thence to Denver, thirty-two miles from Longmont, over the track of the Denver, Utah & Pacific. The petition asserts that the Longmont road is indebted to the Utah road several thousand dollars for track, and that the former was bonded in Boston for $440,000, when in reality the road-bed, track, and rolling stock altogether are not worth over $90,000.

A ROTARY PUMPING-ENGINE WITH INTERMITTENT ACTION.

Herr R. Sauer describes in the *Oesterreichische Zeitschrift für Berg- und Hüttenwesen* an engine which has been erected at the Heinrich pit at the Mährisch-Ostrau coal mines, belonging to the Northern Railroad of Austria, in consequence of a sudden influx of water, amounting to 264 gallons per minute; the work required being the lifting of 440 gallons of water from a depth of 656 feet at a speed of eight revolutions per minute. The system adopted is that of M. Kley, of Bonn, which combines the Cornish principle of valves governed by a cataract with the fly-wheel of the ordinary double-acting engine; the latter, however, taking no part in the movement of the valve-gear. The following description is given in the Abstracts of Foreign Periodicals published by the British Institution of Civil Engineers: The steam-cylinder is of 39-inch diameter and 74-inch stroke; the piston-and pump-rods being attached at equal distances from the center of the main-beam, which is prolonged within the engine-house so as to give a double length of arm to the fly-wheel connecting-rod. The object of the fly-wheel is twofold: first, to insure complete safety by fixing the length of stroke in the main-rod; and secondly, to take up the momentum due to the acceleration of the piston while under full steam, giving it out again completely at the end of the stroke: for the latter purpose, a comparatively small rotatory mass is required, the fly-wheel being brought to rest either before or behind the dead-point of the crank, while the change of stroke is effected by the cataract. If the crank does not pass the dead-point, the movement of the fly-wheel is reversed during the following stroke, producing an oscillating movement like the balance-wheel of a watch; and even when moving at greater speed, when there is no actual pause, there is a perceptible retardation of the change of stroke, giving the necessary time for closing the pump-valves.

If, by the breakage of the main-rod of the pump-spears, the equilibrium between the power and load is suddenly disturbed, the speed of the fly-wheel being very greatly increased, carries the crank quickly over the dead-point, and, drawing the cataract after it before it has had time to complete the stroke, the steam-valve is shut and the engine necessarily stops.

The valve-gear is moved by a system of tappets from an auxiliary beam, worked from the main beam-center. Although the engine is double-act-

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ing, there is only one cataract, the steam admission-valve on one side being closed simultaneously with the exhaust on the other. A portion of the work due to the expansion of the steam in the cylinder is therefore taken up in compression, but this is actually advantageous in retarding the speed toward the end of the stroke. The cold-water admission to the condenser is regulated by the valve-gear, the injection being closed at the same moment as the steam-valve.

The main-rod in the shaft is a rectangular cross in section, built up upon four angle-irons, varying in substance from 2·9 inches length of arm, and 0·47 inch thick, in the bottom part, to 3·94 inches and 0·47 inch in the middle, and 4·14 inches and 0·55 inch at the top. The total lift is 853 feet, of which 656 feet are divided over three plungers, and the bottom 197 feet over two drawing-lifts. The total weight of the rods in the shaft is 37·3 tons, the excess of which is counterpoised by balance-weights of 10·9 tons attached to the inner side of the beam, between the points of attachment of the piston-rod and the connecting-rod. The engine was built from M. Kley's designs at Prince Salm's engine-works at Blansko. The total weight is 73¼ tons.

THE MONTANA COMMISSIONER.

EDITOR ENGINEERING AND MINING JOURNAL:

SIR: I desire to state that the statements and insinuations made by your correspondent "Beau," in a letter published in your issue of July 29th, purporting to have been written here, but actually written at Denver, in so far as they relate to me, are absolutely false. The name of Prof. J. R. Clayton was not presented by me, or any one else, before the committee referred to, but was simply talked of incidentally. It is well known that I, from first to last, urged the selection of Mr. T. B. Bennett, and that he was in every way satisfactory to the committee, but he declined to go. Whereupon the committee decided to let the matter drop, and this committee did not select Mr. Read, as stated by "Beau."

Respectfully,
W. A. CLARK.

BUTTE CITY, MONTANA, Aug. 10.

THE LIQUATION OF BASE BULLION AT FREIBERG.

In the Freiberger *Jahrbuch*, Herr Schertel gives some analyses of a large lot of base bullion and of the dross obtained by liquating it, the quantity of dross obtained being 5·1 per cent of the whole. These analyses, which we give below, are of interest as showing how the various impurities of the lead are eliminated. Unfortunately, no indications as to the temperature are given.

The following are the analyses referred to:

	Base bullion.	Dross.
Silver	0·544 per cent.	0·17 per cent.
Lead	.... "	62·40 "
Copper	0.940 "	17.97 "
Bismuth	0·066 "	..... "
Arsenic	0·449 "	2·32 "
Antimony	0·820 "	0·98 "
Tin	0·210 "	0·04 "
Nickel and cobalt	0·055 "	1·09 "
Iron	0·027 "	0·43 "
Zinc	0 022 "	0·07 "
Sulphur	0·200 "	4·00 "
Oxygen	..... "	1·87 "
Cinder, ashes and hearth	..... "	8·66 "

According to these data, almost all of the sulphur, 93 per cent of the copper, 96 per cent of the nickel and cobalt, 25 per cent of the arsenic, and only 5·8 of the antimony and 1·54 per cent of the silver go into the dross. Bismuth is retained by the lead entirely, and tin also, with the exception of 0·9 per cent. We may add, in the absence of figures for gold in the above, that in American desilverizing works experience has shown that the larger proportion of this precious metal follows the copper.

Herr Schertel has made an interesting experiment in melting down this complex dross with borax, obtaining three products, metal, speiss, and matte, which were composed as follows:

	Metal.	Speiss.	Matte.
Silver	0·34	.....	.....
Copper	1·79	37·60	47·70
Lead	.96·50	25·68	32·80
Nickel	0·C8	8·60	0·25
Arsenic	0·75	27·00	1·15
Sulphur	.. ..	....	17·72

From the absence of iron, always present in the speisses and mattes obtained in the blast-furnaces producing the base bullion, Herr Schertel concludes that the various impurities of the lead are not present in it, in the form of speiss or matte, but are dissolved in the lead. They form compounds of that character only after having undergone the liquating process. He holds that the removal of copper from base bullion by liquation is not dependent upon the formation of a lead-copper alloy but upon the quantity of sulphur and arsenic present. The ancient method of refining lead by stirring with poles coated with sulphur might easily be tried to test the accuracy of this theory, and if correct, might aid in the elimination of copper, which is an unpleasant element in zinc desilverization, as it practically neutralizes the first addition of zinc and furnishes a disagreeable product to handle by distilling and cupelling.

GENERAL MINING NEWS.

ARIZONA.

ARIZONA COPPER PRINCE.—The mine of this company, controlled by New York gentlemen, and located near the Copper Queen, was forcibly taken possession of by persons connected with the latter. The Copper Prince has developed very finely of late, showing a good body of ore near the Copper Queen ground. The claim is patented. We understand that an injunction is to be taken against the aggressors.

BONANZA CHIEF.—The grading for the mill-site is nearly completed, and a large portion of the mill machinery has arrived. It is stated that 2200 tons of high-grade ore are now on the dumps.

GUNSIGHT.—A forty-stamp mill has been added to the Gunsight mine.

RUSSELL.—This mine, the property of a Philadelphia company, the Russell Gold and Silver Mining Company, is located 25 miles east of Tombstone. It is 110 feet deep. The smelter is producing from 5 to 6 tons per twenty-four hours.

TOMBSTONE DISTRICT.

In July, the Grand Central shipped $100,000; the Contention, over $148,000; the Vizina, $22,000; and in June and July, the Head Center shipped $22,000, and the Tombstone Mining and Smelting Company, $68,000.

CONTENTION.—Another rich strike has been made in the Contention mine, below the water-level.

EAGLE.—Chlorides and horn-silver have been struck at a depth of 80 feet in the Eagle mine, which was recently purchased by Eastern parties at a low figure. Hoisting-works will be built at this mine soon.

HEAD CENTER.—This company contemplates moving the mill from the river to the mine.

CALIFORNIA.

An injunction has been served on the Birdseye Creek hydraulic mine which empties into Bear River.

ALEXANDER MINING COMPANY.—Judge Sullivan, in the Superior Court at San Francisco, rendered judgment for $175,000, and interest from December, 1880, in favor of the plaintiff in the case of Carnie M. Beach *against* J. B. Cooper, A. B. Cooper, George A. Ball, John McNeil, Manuel San Pedro, and the Alexander Mining Company.

BODIE DISTRICT.

There is nothing new in the Bodie District. The *Free Press* says: The development in Red Cloud is certainly worthy of consideration. It will take some time to determine the extent of the recent discovery; but so far, there is enough in sight to cheer the managers of the leading properties on Silver Hill.

DEFIANCE.—On Tuesday night, says the Bodie *Free Press* of August 5th, the Defiance mine was relocated and taken possession of by M. Marks, Louis Lewis, and other parties. It is claimed that no work was done on the mine in 1881, and that it has been subject to relocation since the 1st of January. The proximity of the Defiance to the Red Cloud, in which the rich strike was recently made on the 700-foot level, makes the relocation a matter of possible importance.

THE MARIPOSA ESTATE.—In July, 1877, a suit to foreclose a mortgage on the Mariposa estate was begun in California by Joseph A. Donohoe, the mortgagee, whose claim amounted to some $350,000. The suit was resisted by the Mariposa Land and Mining Company, of California, the mortgagor, and by the Farmers' Loan and Trust Company, of New York, trustee under a second mortgage to secure the payment of $500,000 in bonds. The case was carried to the Supreme Court of California, and, after four years and a half of litigation, was decided in favor of Mr. Donohoe, who was awarded the full amount of the claim—$344,000—and the property was sold in January, 1882, for that amount. Under the laws of California, six months were allowed the mortgagor—the Mariposa Land and Mining Company—to redeem the property by the payment of the judgment. This period expired a few weeks since, when the company failed to redeem, having been unable to raise the money, and the estate has therefore become the absolute property of the purchaser under the mortgage sale. The mortgage bonds for which the Farmers' Loan and Trust Company is trustee are wiped out of existence, as well as $10,000,000 common and $5,000,000 preferred stock, together with all the floating debt of the company, which is considerable. The Mariposa estate consists of 44,000 acres of mountain land on the westernmost spur of the Sierra Nevada range. The stock of the company has been dealt in at all the exchanges in this city for more than twenty years, where it has sold as high as $97 per share and as low as ten cents per share, and many fortunes have been made and lost in it. The property originally belonged to Gen. John C. Fremont, who purchased it from Don Juan Alvarado, a distinguished Spanish military officer, to whom it was granted by the king of Spain as a reward for faithful and efficient service to the king. It passed into the control of Trenor W. Park, Mr. Ketchum, Commodore Garrison, Mark Brumagim, Frederick Law Olmstead, Col. W. Thorpe, and Kelly, Donohoe & Co., the last of whom now retain it.

COLORADO.

The Pacific Mining and Reduction Company, of San Francisco, has, according to the Idaho Springs *Advance*, leased the Star mill at Idaho Springs, to put in a plant in accordance with the Campbell patent process, which is controlled by the Campbell Reduction Company of this city. The first test is to be made with Freeland concentrates.

At Pitkin, the Moonlight mine is soon to have a ten-stamp mill, and the Lucille has ordered a mill from Chicago.

The Waitz process is claimed to have been successfully tested at Silver Cliff.

BOULDER COUNTY.

U. P.—According to the Boulder *Banner*, two men struck rich ore on Magnolia Hill.

CHAFFEE COUNTY.

At Chaffee City, the Madonna smelter is running with a prospect of enlarging its capacity soon.

The Mount Ætna Company is pushing work in the Uncle Sam and Homeward Bound.

CLAREMONT.—A company with this name has been formed to work mines in the Red Mountain District and in Tennessee Park, Lake County. It proposes to put up a large mill.

CHAFFEE COUNTY—MONARCH DISTRICT.

MADONNA.—This company has just finished its smelter. Its Smith & Gray mines are doing well.

MONARCH.—The Monarch mine, owned by Governor Rice and others of Boston, is the great property that gave name to the district. The vein is apparently a true fissure, dipping at an angle of about forty-five degrees, and lies all the way in lime, the mineral being found mostly in seams in the lime-rock. It is developed by two inclines run down on the vein, one 125 and the other 150 feet; by a tunnel in 212 feet; and by an uprise of 100 feet from one of the inclines. From this uprise there were taken 100 tons of rich ore. The vein varies in width from one and a half to ten feet, and the ore runs all the way from thirty-five ounces in silver and twenty-five per cent of lead to 410 ounces in silver and sixty-five per cent of lead. It is sulphurets, silver glance, and block galena, the latter carrying from fifty to 200 ounces in silver. Surface ore from this mine has run 400 ounces in silver. Its daily product is now from five to ten tons. The tunnel by which it is intended to extensively work the property has not yet struck the main vein, but has crossed some small veins from which has been obtained a little good ore.

CLEAR CREEK COUNTY.

Vivian & Co.'s smelter will soon be in operation.

CHAMPION.—It is stated that an English syndicate has bought this mine.

DIAMOND TUNNEL.—This property, near Silver Plume, consists of nine patented lodes, of which the Corry City is the largest. A tunnel is running into Republican Mountain, and has now reached a distance of 2010 feet.

MAYFLOWER.—The Idaho Springs *Advance* understands that the Mayflower stockholders will not lose any thing in consequence of its being sold under mortgage, but will be benefited thereby. Messrs. Grinnell, Burt, and Hobert, who bid in this property for $12,500, and who held the mortgage under which it was sold, propose now to issue the same number of shares of stock as were before in existence, giving to each stockholder shares of this issue in lieu of those held under the former management.

TRAIL CREEK.—At a meeting of the shareholders of the Trail Creek Tunnel and Consolidated Gold and Silver Mining Company, held at Idaho Springs, the following directors were elected for the ensuing year: William D. Price, President; Adam Miller, Vice-President; Robert Turner, Idaho Springs, Secretary and Treasurer; James Allan, Idaho Springs; John H. Smith, Denver, Colo.; M. D. Ogden, M.D., Chicago, Ill.; Thomas Gillatly, Matlock, Ont.

GILPIN COUNTY.

According to a statement which we find in the Black Hawk *Post*, the total amount of bullion shipments from that county for the six months ended 30th

June, was: January, $71,140; February, $66,850; March, $71,001; April, $62,485; May, $58,750; June, $54,052; total, $383,078.

GUNNISON COUNTY.

From Irwin comes the statement that in Ruby Camp work is progressing favorably. The Pioneer mill is running steadily. Messrs. Rose, Reed & Co. are going to add a concentrator to their sampling-mill. Rich ore is extracted from the Forest Queen, the Ruby King, the Durango, and the Oaks.

LAKE COUNTY.

ROBERT E. LEE.—Judge McCrary, of the United States Circuit Court, has granted a rehearing in the case of M. Seymour Rogers *against* James Y. Marshall and others, which involves the title to one third of the mine.

LEADVILLE.—Our regular correspondent sends us the following letter this week: The local committees selected to perfect the final arrangements for the entertainment of the members of the American Institute of Mining Engineers, during their stay in Leadville, on the occasion of their coming Colorado meeting, have made a very encouraging report to your correspondent. Invitations have been received from nearly all the leading mines and smelters, including the Robert E. Lee, Chrysolite, Carbonate, Henriett, Iron Silver, and Silver Cord mines, and all the smelters and stamp-mills. Arrangements have been made for taking an excursion to the Evergreen Lakes, a pleasant resort six miles from the city, at the foot of Mount Massine. Favorable hotel arrangements have been made, and the elegant rooms of the Leadville Mining Club have been thrown open to the society. Transportation and other matters pertaining to the accomodation and pleasure of the members have been attended to, so that their visit to Leadville will be one of the most interesting and enjoyable affairs in the history of the Institute.

FRYER HILL.—While nearly all the older producing sections of this district continue making new discoveries and developments, the main portion of Fryer Hill is at a discouraging stand-still, not due to any diatoriness on the part of the managers or companies, but to the evident truth that the greater part of this hill, on the ore horizon which has yielded so largely in the past, is just about worked out. This section embraces the Dunkin, Climax, Amie, Little Chief, Little Pittsburg, and Chrysolite properties. While it may be poor policy for a resident correspondent to give any thing but the most favorable news, still, in a mining section like this, endowed with such wonderful and extensive resources, the truth will never hurt any one. The management of the Little Pittsburg, during the past three months, has sunk two consolidation new shafts without avail, and is also prosecuting work on the southern portion of its territory, and in every instance passed the depth at which mineral should have been encountered without disclosing the looked-for bonanza. In the Chrysolite, the sinking of the Roberts shaft is again pursued, but few resident mining engineers believe in its success. The other portions of the mine, as the extraction of ore continues, show decreased resources. The Little Chief mine is not paying expenses, and as no exploration-work is in progress, it can not continue much longer. The Matchless mine is still in a fair condition, while the Lee mine shows resources equal, if not superior, to its palmiest days. East of the Lee, the Little Sliver is promising well. East of this, no work is now in progress, and any announcement of opinion as to the future of the Forepaugh, Tip Top, and other properties, would necessarily be unreliable, considering the absence of any specific data.

CARBONATE HILL.—This continues its full quota of ore-shipments. The leading mines on this hill are doing as well as at any time heretofore. Among the developments is a rich ore-chute uncovered in the Ætna mine, also new ore-bodies disclosed in the Morning Star consolidation. The Brookland, mention of which was made in last week's letter, shows a very strong chute of ore. The Clontarf, just south of the Brookland, is again at work, and will contribute in a few days to the ore output of the camp. The Wolf-Tone, it is expected, will begin preparations for putting in a new pumping plant this week. The William Wallace and Thespian, both east of the crest of Carbonate Hill, will soon be in readiness to resume sinking. The developments in these two shafts will be observed with a great deal of interest, especially in the latter shaft, which is located a considerable distance south and east of the center of Carbonate Hill, and surrounding which no work of consequence has been done. Both of these shafts are down over four hundred feet, and are believed to have been on the point of penetrating the contact when overwhelmed with water.

LOWER ROCK HILL.—South of Carbonate Hill, on the flat elevated strip of ground between California and Iowa gulches, extending westward beyond the head of Georgia Gulch, new developments of vast importance have been made. The Only Chance, one of a number of locations owned here by Thomas and Joeseph Wells, has disclosed a good body of ore at a depth of about 300 feet. The mineral is a sand carbonate, and carries a paying amount of silver. A number of other shafts are going down. The formation is such, however, that the depth necessary to reach contact can not be depended upon, there being a series of faults, together with minor cross-faults, making it almost impossible to place any reliance on the depth from the surface to the limestone ore-bearing horizon. A number of shafts have disclosed a vast ancient lake-bed, having a maximum thickness of 150 feet, and consisting of brecciated as well as pebble-shaped fragments of porphyry and other rock, cemented together with lime. Over this mass is a cap of block porphyry covered with boulder wash.

BREECE HILL.—The Mike & Starr mine is limited in its development-work and ore extraction by uncontrollable quantities of water. A pump is to be procured immediately. The Park and other lodes east of Adelaide Park are still doing well, and new developments are an almost daily occurrence. The Highland Chief and Miner Boy mines are working on a lease; the former is doing moderately well. The owners of the St. Louis lode, conflicting with the Colorado Prince, the claim of which they defeated some time ago, have been placed in possession of the Colorado Prince tunnel and shaft, and are now working a small force.

BALL MOUNTAIN.—Mr. M. E. Smith, superintendent of the La Plata mine and smelter, is the lessee of the Sunday lode, on this mountain, and is confident he will make the lode pay. The Antioch mine, in the same vicinity, began shipping regularly during the past week. The ore is porphyritic quartz, carrying free gold, and is treated at the new Mathers & Brooks mill. The gold interests, both regarding lode and placer mines, are improving rapidly. A number of handsome gold retorts were exhibited to your correspondent during the past week; and this district, which dawned upon the people in 1860 with its roseate hues of golden light, is passing the silvery whiteness of the early morning sky, and is just beginning to shed the dazzling light of splendor born of a mid-day sun. It is the reflection of not only one metal, but of a great combination of mineral wealth, comprising nearly all the precious and useful metals, and in unbounded quantity. W.

August 13.

DAKOTA.

A dispatch from Deadwood states that the Portland mill, Bald Mountain, has resumed operations after eighteen months' idleness. The affairs of the company have been adjusted, and prospects are favorable for the continuance of work. The Grand Junction and the Caledonia mills will start up at an early day. The Cassel mill is working.

BLUE LODE.—The *Pioneer* says it has reliable information to the effect that the Blue lode, near Sheridan, was recently sold by Messrs. Chase, Thompson & Gardner to Chicago parties for $100,000.

CHARTER OAK.—This company has purchased the Manville ten-stamp mill, and will add it to the mill already in operation on that property, making twenty stamps for prospecting purposes.

FATHER DE SMET.—The superintendent reports, for week ended August 8th, that 1100 tons of ore were extracted from the first level, 1100 tons from second evel, and 125 tons from third level. During the week, 2275 tons of ore were milled. North-end tunnel is in 725 feet; Golden Gate header, 185 feet; and third level header, 69 feet. Golden Gate header has been connected with Golden Gate cross-cut, and completed.

HOMESTAKE.—The Black Hills *Index* reports that work began on the American Flag by sinking a large shaft a short distance west of the Old Abe hoisting-works. This is one of the properties of the Homestake Company, and is well known to be a rich ledge.

GUSTIN BELT.—The Black Hills *Index* says: Since the publication of our first notice of the association of the gentlemen composing this mammoth organization, a meeting has been held, officers elected, and a subscription to the stock made. The officers, as elected, are: Nimrod Lancaster, President; R. C. Lake, Vice-President; F. M. Dorrington, Secretary; James O. Gunsolly, Treasurer; W. C. Kingsly, Attorney; William E. Jones, Superintendent. Nearly $40,000 were subscribed, and money paid into the treasury. To-day, examinations of the property are to be made as to the most feasible place to begin operations.

IDAHO.

CHARLES DICKENS.—The Idaho *World* says: A six weeks' run of the Charles Dickens arrastra turned out $24,000, working only from one and a half to two tons of ore per day of 24 hours. The mine is looking better than ever before, and the first-class ore on the dump ready for shipment will turn out $170,000.

The Philipsburg custom mill charges 40 ounces per ton for reducing ore.

LEESBURG.—A company has been formed in Salt Lake City, with a capital of $2,000,000, with Eli H. Murray, of Salt Lake City, as president, and A. C. Emerson, of Ogden, as secretary, to work the Golden Rule, Golden Terra, Musgrove, Comet, and Albion, in Lemhi County. The company goes under the title of the Leesburg Milling and Mining Company.

MICHIGAN.

A new Norwalk compressor, large enough to furnish power for 15 power-drills, is setting up at Boston.

There has just been set up at the Champion mine a very large Rand compressor, and the Cleveland has ordered another of the same size.

The following table, from the Marquette *Mining Journal*, exhibits, in gross tons, the total lake shipments of iron ore from upper peninsular ports the present season, up to and including August 9th, together with the amount shipped during the corresponding period last year:

Name of port.	1881.	1882.
Escanaba	730,196	968,009
Marquette	339,523	564,217
L'Anse	28,099	29,019
St. Ignace	.....	18,653
Total	1,097,818	1,579,898

MONTANA.

The agitation in Butte, in the contest of proprietors of mineral claims against real-estate holders, continues.

BUTTE DISTRICT.

In the various mines of this district, work is going on steadily The Alice oisting-works are progressing rapidly. The connection between the Ramsdell's Parrot and the Shaksperean Parrot has been made. From both mines the ore is taken to the Longmaid concentrator. The Salvadore is troubled with water, and the Josephine with bad air. From the St. Lawrence, 98 tons of ore were shipped in the first twelve days in July to Baltimore, netting $12,760. Only 40 per cent copper ore is shipped.

TIDAL WAVE DISTRICT.

The Butte *Miner* contains information to the effect that the Fusilade, Magnolia, Two Dans, Rosini, Eureka, Stone, Illinois, and other mines, all little developed, are showing quite well.

NEVADA.

GILMER-SALISBURY.—The Pioche *Record* states that work is pushed vigorously. The ore struck in the 100 west level of the Tempest is developing well.

RAYMOND & ELY.—The personal property of this mine was sold on the 14th inst. by the sheriff. The mine is advertised for sale for Lazard Freres on the 2d of September, to satisfy a judgment of $62,151.79.

BETTY O'NEAL.—The Highland Chief mill will start on ore from this mine.

BELMONT.—The mill is started. It is stated that the company has from 4000 to 5000 tons of ore on this dump.

DAHLGREN.—Superintendent Morgan, of the Dahlgren mine, reports it to be looking well, and that the force of miners is steadily employed in opening up the ore-body. The company is undecided whether to build a mill immediately or lease one of the other mills for a time.

RICHMOND.—There are rumors that the smelting-works of this company may be shut down. Outside coal men have been notified that they need not deliver any more coal at the Richmond furnaces.

NEW MEXICO.

It is stated that a large smelter is likely to be erected at Rincon.

The reports from the San Andres District are encouraging.

In the Kelly mine, Magdalena, a large deposit of copper and lead carbonates has been opened at a depth of 100 feet. It is estimated that there are 50,000 tons of ore in sight. The smelter is running constantly.

The Valerie smelter is turning out 3000 pounds of copper per day.

PENNSYLVANIA.

The Sunbury *News* reports that Mr. William Raker, of Shamokin, is developing zinc mines near Sunbury, and has shipped ten tons of ore to Bethlehem.

UTAH.

Assessments are called for on the Apex Mining Company, of 1¼ cents per share, payable before September 8th; and on the Mackay & Revolution Mining Company, of 3 cents, payable before September 5th.

DESERET.—This company, a Chicago concern, whose mines are located in the Detroit District, Milland County, is pushing its main shaft down to the 250-foot level.

SILVER REEF.

At Silver Reef, the new development in the Tecumseh, of an ore-body shown up for eighty feet in length and six feet in width, assaying $100 per ton, gives renewed confidence to the operators in the district.

TINTIC DISTRICT.

The Salt Lake *Tribune* states that the mammoth matting operations of Mr. Bowers continue to treat about ten tons of the copper ore per day in each of four furnaces. Additional capacity is very desirable, and more furnaces will be constructed as rapidly as possible. The Homansville mill, under the Hon. Alexander Graham's management, will start up again about September 1st. The new strike in the Northern Spy shows up some very fine ore.

The Marysvale difficulty appears in a fair way of settlement, with better prospects ahead than ever before. The Copper Belt operations were stopped by legal process; but it is understood that the differences and obligations are about settled, and that the Connecticut company, which owns the property, will add the Deer Trail and other mines to their plant, and go ahead stronger than before.

WYOMING.

Much excitement has been caused at Deadwood by the sale of the Michigan and Sunrise copper mines, near Fort Laramie, to Colonel Babbitt, of Wyoming, who has already ordered a smelter. It is stated that shipments of ore from these mines to Baltimore netted $150 per ton.

DIVIDEND-PAYING MINES.

NAME AND LOCA- OF COMPANY.	SHARES. No. in 1000's	SHARES. Par Value.	ASSESSMENTS. Lev'd to date in 1000's.	ASSESSMENTS. Date and amount per share of last.		DIVIDENDS. Total paid to date in 1000's.	DIVIDENDS. Date and amount per share.		HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE. Aug. 12. H.	Aug. 12. L.	Aug. 14. H.	Aug. 14. L.	Aug. 15. H.	Aug. 15. L.	Aug. 16. H.	Aug. 16. L.	Aug. 17. H.	Aug. 17. L.	Aug. 18. H.	Aug. 18. L.
Alice, Mon..	460	2	*	.....	.....	400	De 81	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Amie Con., Co....	500	10	*	.....	.....	305	My 80	10	.21	.20	.20	.....	.20	.....	.20	.18	.19	.18	.19	.18
Atlantic, Mich....	46	25	.....	.....	.....	140	Fe 82	2 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Argenta, Ne. ...	100	100	175	Ju 82	15	40	Fe 80	20	.....	.....	.....	.....	.55	.50	.....	.....	.....	.....	.....	.....
Bar & Walker, Ut.	100	10	*	.....	.....	60	No 80	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bassick, Co.....	100	100	*	.....	.....	25	Fe 80	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belle Isle, Ne.	100	100	65	My 82	10	300	De 79	25	.....	.....	.....	.....	.....	.....	.40	.36	.47	.40	.45	.....
Black Bear, Ca....	30	100	15	Se 79	50	865	Ap 82	30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Belcher, Ne.....	104	100	2536	Au 82	25	16397	Ap 76	1 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.10	.....
Bodie Cons..Ca...	100	100	125	De 81	50	1225	Au 82	25	5.25	.....	5.63	5.25	.....	.....	4.90	.....	5.25	.....	.....	.....
Bos'n & Mon.Mon.	200	10	.....	.....	.....	280	My 82	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Breece, Co.....	200	25	*	.....	.....	2	Fe 80	1	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Bulwer, Ca.....	100	100	30	De 77	50	100	Au 82	10	1.80	.....	1.80	.....	1.80	1.60	1.75	1.70	1.70	1.20	1.70	1.30
California, Ne....	500	100	422	Ju 82	10	31320	De 79	50	.19	.15	.20	.....	.....	.....	.16	.15	.16	.....	.....	.....
Cal. & Hecla, Mch.	100	25	.....	.....	.....	21850	Au 82	5 00	*	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Caribou Con..Co.	100	10	*	.....	.....	50	Mr 80	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Carolina Q'n,N.C.	100	2	.....	.....	.....	4	Jy 82	02	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Castle Creek, Id..	100	1	.....	.....	.....	0	Au 82	03	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Catalpa, Co.....	300	10	*	.....	.....	180	My 81	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Chrysolite, Co....	200	50	*	.....	.....	1600	De 81	50	2 45	2.30	2.40	2.35	2 45	2.40	2.40	2.35	2 40	2 35	2.40	2.35
Climax, Co.....	200	10	*	.....	.....	180	Au 80	30	.....	.....	.....	.....	.20	.....	.20	.18	.....	.....	.19	.18
Cons. G. Mg., Ga.	100	5	*	.....	.....	64	Au 82	04	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Cons. Va., Ne....	540	100	897	Au 82	30	42930	Au 80	50	.41	.38	.46	.40	.42	.40	.40	.38	.40	.38	.41	.....
Copper Queen, Ar.	250	10	*	.....	.....	375	Jy 82	40	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Crown Point, Ne.	100	100	2673	Fe 82	25	11488	Ja 75	3 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
D'dw'd-Terra, Dk	200	25	.....	.....	.....	+775	Au 82	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Dunkin, Co.....	200	25	*	.....	.....	200	Ju 81	7½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Eureka Cons., Ne.	50	100	100	My 76	1 00	‡	Jy 82	25	14⅜	.....	.....	.....	.....	.....	14.30	.....	.....	.....	14⅜	14¼
Evening Star, Co.	50	10	*	.....	.....	1175	Jy 82	1 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Excelsior, Ca.....	100	100	300	Ja 82	1 00	875	Oc 81	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Fa. de Smet, Dk..	100	100	.....	.....	.....	400	Se 82	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	6.25	.....
Findley, Ga.....	200	1	*	.....	.....	6	My 79	1	.....	.....	.....	.....	.....	.....	.....	.....	.10	.....	.....	.....
Freeland, Co....	200	25	*	.....	.....	50	My 80	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Glass-Pend.. Co.	250	20	*	.....	.....	25	My 81	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Gold Stripe, Ca..	150	10	*	.....	.....	76	Jy 81	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
G'ld & Curry, Ne..	108	100	3422	My 82	50	3826	Oc 70	$10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Grand Prize, Ne..	100	100	570	Ju 82	20	450	Se 80	25	.....	.....	.....	.....	.50	.....	.55	.....	.55	.....	.....	.....
Great Eastern, Dk	300	1	*	.....	.....	16	Jy 80	01	.05	.....	.05	.....	.....	.....	.04	.....	.5	.04	.05	.04
Gr. Mountain, Ca.	125	10	*	.....	.....	212	No 81	7½	2.30	.....	2.25	.....	2.30	2.15	2.30	.....	2.25	.....	2.25	.....
Hale & Nor., Ne..	112	100	3950	My 82	50	1598	Ap 71	5 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hall-And's'n, N.S.	150	1	.....	.....	.....	7	Ja 82	05	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hecla Con., Mon.	30	50	.....	.....	.....	342	Ap 82	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Hibernia, Co.....	300	25	*	.....	.....	180	Jy 81	40	.07	.....	.08	.07	.08	.....	.08	.....	.07	.....	.08	.....
Homestake, Dk..	100	100	200	Ap 78	1 00	1562	Au 82	40	.....	.....	.....	.....	.....	.....	20.00	.....	.....	.....	.....	.....
Horn-Silver, Ut...	400	25	*	.....	.....	1400	Au 82	75	.....	.....	.....	.....	.....	.....	9.50	.....	9 50	.....	.....	.....
Hukill, Co.....	200	5	*	.....	.....	210	De 78	10	.29	.....	.30	.....	.31	.....	.....	.....	.27	.....	.31	.30
Indep., Ne.....	100	100	185	Fe 82	15	225	Se 79	25	.....	.....	.70	.....	.85	.60	.....	.....	.71	.70	.....	.....
In. Queen, Ne....	125	2	12	No 79	10	350	Jy 82	05	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Inyo, Ca.....	100	5	*	.....	.....	45	Ap 82	05	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Iron Silver, Co...	500	20	*	.....	.....	700	Ju 82	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	2.05	.....
Jocuistita, Mex...	100	100	.....	.....	.....	550	Au 82	1 50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
La Plata, Co.....	200	10	*	.....	.....	550	Jy 82	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Leadville C., Co..	400	10	*	.....	.....	230	Au 82	05	.71	.....	.....	.....	.....	.....	.76	.72	.72	.....	.....	.....
Leeds, Ut.....	60	100	87	Ju 82	50	78	Oc 78	15	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Little Chief, Co..	200	50	*	.....	.....	700	Au 80	50	.55	.50	.54	.52	.54	.53	.54	.....	.53	.....	.55	.54
Little Pitts., Co..	200	100	*	.....	.....	1350	Mr 80	50	.....	.....	.....	.....	.....	.....	.....	.....	1.25	.....	1.30	1.25
Martin White, Ne	100	100	925	My 82	25	90	Jy 79	30	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Monroe, Co.....	200	10	4	.....	.....	550	Mr 78	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Morning Star, Co.	100	10	.....	.....	.....	40	Jy 82	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Navajo, Ne.. Co.	100	100	235	Mr 82	20	25	Mr 81	25	4.95	4.70	5.75	4.75	.....	.....	.....	.....	5.50	.....	5.88	.....
N. Y. & Colo., Col.	50	20	.....	.....	.....	25	Jy 79	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N'h'n Belle, Ne..	50	100	.....	.....	.....	2225	Au 82	50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
N. Belle Isle, Ne..	100	100	40	Jy 82	15	30	Au 81	15	.....	.....	.....	.....	.....	.....	.20	.....	.27	.25	.....	.....
Ontario, Ut.....	150	100	.....	.....	.....	4550	Au 82	50	.....	.....	40.00	.....	.....	.....	40.00	.....	40.25	.....	.....	.....
Ophir, Ne.....	100	100	3395	Jy 82	1 00	1595	Jy 82	1 00	.....	.....	2.88	.....	.....	.....	2.25	.....	2.25	.....	.....	.....
Osceola, Mich....	50	25	.....	.....	.....	710	Jy 82	1 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Plumas, Ca.....	100	10	*	.....	.....	151	Jy 79	8	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Quicks. Pref., Ca.	43	100	.....	.....	.....	654	Ju 82	6 00	.....	.....	.....	.....	.....	.....	.....	.....	45.50	.....	.....	.....
" Com., Ca.	57	100	.....	.....	.....	151	Ju 82	40	.....	.....	.....	.....	.....	.....	.....	.....	10.00	.....	.....	.....
Quincy, Mich.....	40	25	.....	.....	.....	3230	Au 82	5 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Rising Sun, Ca...	150	5	*	.....	.....	52	My 81	7½	.40	.....	.....	.....	.....	.....	.....	.....	.40	.39	.20	.....
Robinson C., Co..	200	50	*	.....	.....	575	No 81	50	1.65	1.60	1.65	1.55	1.65	.....	1.60	1.40	1.50	1.45	1.45	1.40
Robt. E. Lee, Co.	500	500	.....	.....	.....	50	Jy 81	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Savage, Ne.....	112	100	3664	Ju 82	50	4460	Ju 69	3 00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Sierra Nev., Ne...	100	100	4950	My 82	1 00	102	Ja 71	1 00	4.75	4.63	4.75	.....	4.63	.....	4.25	.....	.....	.....	.....	.....
Silver King, Ar...	100	100	.....	.....	.....	1025	Au 82	25	15.00	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Silver King, Co...	500	2	.....	.....	.....	50	Au 81	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Socorro, N. Mex..	2.5	100	.....	.....	.....	4	Mr 82	¾	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Spr'g Valley, Ca.	200	1	*	.....	.....	50	Ja 81	25	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Standard, Ca.....	100	100	.....	.....	.....	8900	Au 82	75	13⅜	13.00	13.50	13.00	13.00	12.00	12¼	11.00	9.00	8.00	8.50	8.00
Starr-Grove, Ne..	200	10	*	.....	.....	16*	Ju 81	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Stormont, Ut.....	200	1	*	.....	.....	155	No 81	05	.....	.....	.88	.....	.....	.....	.34	.....	.....	.....	.35	.....
St. Joseph, Mo....	100	10	*	.....	.....	350	Ju 82	20	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Tip Top, Ar.....	100	100	170	Mr 80	50	100	No 81	20	.....	.....	.....	.....	.....	.....	2.00	.....	.....	.....	.....	.....
Tombstone, Ar....	300	25	*	.....	.....	1350	Ap 82	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Vizina, Ar.....	200	25	.....	.....	.....	140	Mr 82	10	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Yellow Jacket ...	120	100	5838	Fe 82	1 00	2184	Au 71	2 50	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

*2.47¾.

* Non-assessable. † The Deadwood has previously paid $275,000 in eleven dividends, and the Terra $75,000. ‡ 4817·5

SALES.—Amie Consolidated, 22,100; Argenta, 150; Belle Isle, 2200; Belcher, 20; Bodie Consolidated, 750; Bulwer, 6249; California, 8300; Calumet & Hecla, 100; Chrysolite, 10,000; Climax, 900; Consolidated Virginia, 10,630; Dunkin, 600; Eureka Consolidated, 150; Father de Smet, 100; Findley, 1000; Grand Prize, 900; Great Eastern, 6100; Green Mountain, 6075; Hibernia, 8200; Homestake, 10; Horn-Silver, 300; Hukill, 1900; Independence, 1815; Iron Silver, 700; Leadville, 1000; Little Chief, 6075; Little Pittsburg, 1000; Navajo, 1700; North Belle Isle, 1600; Ontario, 300; Ophir, 525; Quicksilver, preferred, 200; common, 160; Rising Sun, 400; Robinson Consolidated, 53,185; Sierra Nevada, 420; Silver King, 65; Standard, 3265; Stormont, 600; Tip Top, 100. Dividend shares sold, 159,784.

FINANCIAL.

Gold and Silver Stocks.

NEW YORK, Friday Evening, Aug. 18.

Business at the Mining Exchanges this week has been better and of a more general character, although prices have, as a rule, been weak. The Bodie stocks have shown considerable weakness, Standard having fallen off to $8. This is a large decline from the strong prices of a year ago, and will be strongly felt in mining circles. The rest of the market is without particular interest. The sales of mining shares at all the Exchanges this week aggregate 532,689 shares, as against 464,990 last week.

The Leadville stocks have had a fair business at steady prices. Amie has been steady at 21@18c. Chrysolite has been fairly active at steady prices; the sales aggregate 10,000 shares at $2 30@$2.45@$2.35. Dunkin was very quiet at 25c. Hibernia sold at 7@8c. Leadville, with a business of 1000 shares, sold at 71@73@72c. Little Chief was quiet and irregular, selling at 55@50@54c. Little Pittsburg was very quiet at $1.25@$1.30. Climax sold at 20@18c., and Miner Boy at 3@4c.

The Comstock shares have been quiet and generally weak. California was quiet and irregular at 15@20@16c.; Consolidated Virginia was active at steady prices, selling at 46@38@41c. Sierra Nevada was quiet and weak at $4¾@$4¼. Union Consolidated was very irregular at $6¼@$5⅝@$6. Mexican, with a business of 400 shares, sold at $5¼@$5½@$5. Ophir was quiet at $2⅝@$2¼. Best & Belcher was quiet at steady prices, selling at $5⅝@$5¾@$5½. Sutro Tunnel sold at 39@37c., with a business of 12,000 shares.

The Bodie stocks were a little more active than usual, but at generally weak prices. Bodie Consolidated was steady at $5⅝@$4.90@$5¼. Standard has been very weak, falling as low as $8, from $13⅜ last Saturday. It closed weak at $8.50 to-day. Bulwer has been quite active at weak prices; the sales aggregate 6249 shares at $1.80@$1.20@$1.65.

The Tuscarora stocks have been active and strong. Tuscarora was active at 7@9c. Grand Prize was active and strong, selling at 50@65c. Argenta was quiet at 55@50c. Belle Isle sold at 36@47@45c., with a business of 2200 shares. Navajo had a fair business at strong prices, selling at $4.70@$5.88. North Belle Isle was quiet at 20@27c. Independence was irregular though strong, at 85@60@70c.

In the miscellaneous list, Green Mountain has been quiet and steady at $2.15@$2.30@$2.25. Rising Sun sold at 40@20c. Cherokee has been very active, but has fallen off some from the prices obtained the latter part of last week; it has sold this week from 32@25c. Robinson Consolidated has been active and strong, although the price has weakened from the early part of the week; the sales aggregate 53,185 shares at $1.65@$1.40. Stormont has been quiet at 38@34@35c. Decatur has been quiet and steady at 68@60c. Eastern Oregon has been moderately active at $1.55@$1.50. Lacrosse has had a fair business at steady prices, selling at 23@21c. Oriental & Miller records sales of 14,300 shares at 25@20c. Rappahannock has been quiet at 20@18c. Silver Cliff has been quiet and a trifle weak, selling at 60@50c. South Pacific has been active at 14@12c. The State Line stocks have been active and weak; Nos. 1 & 4 sold at 8@5@6c., and Nos. 2 & 3 at 28@24c.

The San Pedro Mining Company, whose mines are at Tombstone, Arizona, has levied an assessment, No. 6, of 5 cents per share, payable before September 6th.

The Rhinebeck Mining Company has elected C. Crowell, President; A. F. Eckert, Vice-President; A. J. Brady, Treasurer; and Frederick Kloeckner, Secretary.

The annual meeting of the Navajo Mining Company was held at San Francisco on the 8th inst., 99,178 shares being represented out of 100,000 shares in the mine. The secretary's report shows receipts during the past year of $108,298.62, and a present indebtedness of $3069.98.

DIVIDENDS.

The Homestake Mining Company announces its forty-eighth dividend of $50,000, payable on the 25th inst.

The Leadville Consolidated Mining Company yesterday declared a dividend of $20,000, or 5 cents per share, payable September 1st.

The Father de Smet Consolidated Gold Mining Company has declared dividend No. 22 of 20 cents per share, payable September 1st.

The Consolidated Gold Mining Company of Georgia has declared its usual monthly dividend of $4000, payable on the 17th prox.

The Contention Consolidated Mining Company, of Tombstone, Arizona, has declared its regular monthly dividend (No. 7), of twenty-five cents per share, payable August 28th.

Copper and Silver Stocks.

Reported by C. H. Smith, 15 Congress street, Boston, Stock Broker and Member of the Boston Mining and Stock Exchanges.

BOSTON, Aug. 17.

The tone of the market is hardly as strong as last week, although prices, as a rule, are not materially lower. The Lake Superior stocks, especially the dividend-paying ones, are still in good demand, and very well sustained. The speculative stocks are inclined to droop; but this is natural after the sharp advance in the most active of them, and it is quite reasonable to believe that, with cooler weather and the return of the brokers from seaside and mountains, a more active and consequently a higher market will be next in order. Calumet & Hecla is very strong. The report of the last year's operations shows that the company has earned about $26 per share, and after paying $20 in dividends, has a handsome amount to carry to surplus fund. The stock advanced from $248@$251, and closed at $250 bid, none offered. Franklin has been very steady at $14¾@$15, with moderate sales. The stock, at present prices, is considered low, in view of a dividend in the near future. Pewabic very dull, with small sales at $10¾@$10½. The stock is freely offered at $11, and $10 is the best bid. Osceola has been in quite active demand, and shows an advance from $32½@$35, with sales later at $34¾@$34½. Atlantic sold at $16, but declined to $15½. It is now offered at $16, but without any bids. Quincy continues to lead in amount of sales, and in the early dealings was rather heavy, and declined to $61½, but later, orders could not be filled except at an advance, which carried it up to $64; receding to $63, and again firmer at $63½, at which it closed strong, $65 asked. Huron lost the advance of last week, and has declined to $3, at which it is offered to-day, without takers. National dull at $2 bid, no sales. Allouez advanced to $2⅛@$2⅜, which was closing bid. We note a sale of Blue Hill, of Maine, at 50c. per share. This stock at one time sold as high as $13¾ per share, since which assessments aggregating 75c. per share have been levied, so that it is now virtually selling at less than nothing; not a very encouraging outlook for Maine investments.

In silver stocks, Bonanza declined to $1, but subsequently rallied to $3⅛, and closed to-day at $3½ bid; sales of about 3000 shares. Indian Queen declined to $1½, with sale of 100 shares only at that price, which is now bid, with $2 asked. Silver Islet, under the favorable reports from the mine, is in fair demand, which has advanced the price from $17@$19¼, with moderate sales, closing to-day at $19 bid. Sullivan dull, with sales at $3, $2¾ bid.

At the Boston Mining and Stock Exchanges, the advance

NON-DIVIDEND PAYING MINES.

NAME AND LOCATION OF COMPANY.		NUMBER OF SHARES.	Par.	ASSESSMENTS. Total levied to date.	ASSESSMENTS. Date and amount of last.	HIGHEST AND LOWEST PRICES PER SHARE AT WHICH SALES WERE MADE. Aug. 12. H	Aug. 12. L.	Aug. 14. H.	Aug. 14. L.	Aug. 15. H.	Aug. 15. L.	Aug. 16. H.	Aug. 16. L	Aug. 17. H.	Aug. 17. L	Aug. 18. H.	Aug. 18. L.
Advance						32c		33c	32c	33c				31c		30c	
Albion, s. L	Nev.	150,000	100	397,500	Jun. 82	25								1.95			
Allouez	Mich																
Alpha	Nev.			420,000	Mar. 82	50											
Alta	Nev.	100,800	100	1,641,600	May 82	50											
Alta-Montana, G	Mon.	500 000	10	*			65c	60c									
Am. Flag, s	Colo	125,000	10	300,000	Jun. 77	25											
Barcelona, G	Nev	200,000	25	*			8c	7c		8c		8c					
Bear Creek	Cal.	300,000	1														
Beauce																	
Bechtel Con., G	Cal.	100,000	100	165,000	Dec. 81	25											
Best & Belcher, G, S	Nev.	100,800	100	1,295,390	Jul. 82	50	5.38		5.75			5.50		5.50			
Big Pittsburg, S, L	Colo	200,000	100	*													
Black Jack, G	Cal.	100,000	2½														
Bonanza Chief	Mon	1,000,000	1						4c							4c	
Bondholder	Colo	200,000	2½														
Boston Con., G	Cal.	100,000	100	70,000	May 82	20											
Bradshaw, S	Ariz	225,000	10						28c			28c	27c	27c		26c	25c
Buckeye	Colo	400,000	5	*			2c										
Bull-Domingo, S, L	Colo	200,000	50	*													
Bullion, G, S	Nev.	100,000	100	3,697,000	Aug. 82	50											
Bye and Bye	Ariz	100,000	10	*			4c		5c			5c		5c			
Calaveras, G	Cal.	500,000	1	*			7c									7c	
C'lav'r's W. & M. Co	Cal.						23c										
Cal. B. H., G	Dak.	100,000	100	465,000	Apl. 82	25											
Carbonate Hill, S, L	Colo	400,000	10				76c		75c		75c		77c	76c	78c		80c	
Catskill, S	Nev.	300,000	5														
Central Ariz'na, S	Ariz	100,000	100				75c	50c	69c		69c				70c		68c	67c
Chaparral	Cal.						6c	5c	7c	5c	5c		5c		6c	4c		
Cherokee, G	Cal.	150,000	10				32c	30c			27c	25c	28c	25c	29c	26c	27c	25c
Clarence	Can.																
Colorado Cent'l, S	Colo	300,000	10														
Col'mb'a Con., G, S	Nev.	100,000	50														
Cons. Imp'ri'l, G, S	Nev.	500,000	100	1,425,00	Jan. 82	10			5c								
Con. Pacific, G	Cal.	60,000	100	126,000	Jan 82	20											
Crescent, S	Colo	300,000	10	*													
Crowell, G	N. C	50 ,000	1				7c		7c		7c		7c		8c		8c	
Dahlonega, G	Ga.	250,000	1	*													
Dardanelles, G	Cal.	100,000	10														
Decatur							68c	65c			60c		63c	60c	63c	60c		
Dunderberg, S	Colo	150,000	10	*													
Durango, G	Dak.	500,000	1	*			11c		11c		10c		11c	10c	10c		10c	
Eastern Oregon							1 50		1.50		1.50		1.50		1.55	1.50	1.50	
Empire, S	Ut'h	100,000	100														
Enterprise	Colo						62c	62c										
Exchequer	Nev.	100,000	100	630,000	Jan. 82	25												
Globe Copper	Ariz.						15c		17c	16c	17c		15c		12c		13c	12c
Gold Placer, G	Colo	200,000	25	*														
Goodshaw, G	Cal.	100,000	100	180,000	Jun. 82	10												
Granville, G	N. C.	800,000	1	*														
Harshaw, S	Ariz	100,000	100															
Head Center, S	Ariz	100,000	100	160,000	May 82	20												
Hortense, S	Colo	200,000	10						26c		26c		25c					
Index	Cal.																	
Julia, G, S	Nev.	110,000	100	1,384,000	Jan. 82	10												
Kossuth, G, S	Nev.	108,000	100	421,200	Aug. 77	15												
Lacrosse, G	Colo	100,000	10	*			23c	22c	22c		23c	21c	23c		21c			
Leviathan, S	Nev	100,000	100	355,000	Mar. 81	25												
Lucerne, S	Colo	500,000	10	*														
Mariposa Pref., G	Cal.	50,000	100	1,687,500	Dec. 81													
" Com., G	Cal.	100,000	100	1,950,000	Feb. 82													
May Belle, G	Cal.	100,000	100	84,000	Dec. 81	20												
Mayflower, S	Colo	100,000	100															
Mexican, G, S	Nev.	100,800	100	2,045,800	Aug. 82	$1			5.38		5.25				5.50	5.00		
Michoacan Synd	Mex.																	
Miner Boy, G, S, L	Colo	500,000	10	*			3c								4c			
Miller	Nev.	200,000	25															
Mono, G	Cal.	50,000	100	500,000	Jun. 82	20												
Moose Silver, S	Colo	300,000	10															
Nevada Syndi																		
North Standard, G	Cal.,	100,000	100	20,000	Nov. 81	10			15c									
N. Horn-Silv'r, S, L	Utah	400,000																
Noonday	Cal.,	60,000	10	118,000	Dec. 81	25												
Old Dominion, C	Ariz	200,000	100	*														
Oriental	Nev.	200,000	10															
Ori'nt'l & Miller, S	Nev.	400,000	25				25c	23c	23c		22c		24c	22c	23c		22c	20c
Overman, G, S	Nev.	115,200	25	3,604,700	May 82	25												
Potosi	Nev.	112,000	100	448,000	Apl. 82	50												
Quartz Creek			100												42c			
Rappahannock, G	Va	250,000		*			20c		19c		19c		18c		18c			
Red Elephant, S	Colo	500,000	1	*														
Retort M. M. Co			10															
San Pedro, G, S, L	N. M	400,000																
Silver Cliff, S	Colo	200,000	25	*			60c	57c							56c	50c	52c	50c
Silver Islet	Can.		50															
Sonora Con	Mex.																	
South Bodie, G	Cal.	100,000		100,000	Mar. 82	15												
South Bulwer, G	Cal.	100,000	100	195,000	May 81	25												
South Hite	Cal.,	100,000	100		May 82	10					19c				19c		15c	
South Pacific	Cal.		5				13c		14c	13c	14c	13c	13c		13c	12c	13c	12c
State Line No. 1, S	Nev.	200,000	1															
" No. 2, S	Nev.	200,000	25															
" No. 3, S	Nev.	200,000	25															
" No. 4, S	Nev.	200,000	25															
" Nos. 1 & 4, S	Nev.		25				8c		7c		8c				7c	5c	7c	6c
" Nos. 2 & 3, S	Nev.						27c	26c	27c	26c	27c		38c	27c	28c	24c	26c	24c
Sutro Tunnel	Nev.	2,000,000		*			39c	38c	39c	38c	39c		38c		38c		38c	37c
Taylor Piumas			10				17c		17c	16c	16c		16c	15c	14c		14c	
Tioga, G	Cal.	100,000		275,000	Jul. 82	10					8c		15c		18c		20c	
Tuscarora, S	Nev.	100,000	100	110,000	Oct. 81	15					8c	7c	9c	8c	9c	8c	9c	8c
Unadilla, S	Colo	500,000	100	*														
Union Cons, G, S	Nev.	100,000	1	1,380,000	Mar. 82	$1	6.25	6.13					5.38		6.00			
Utah	Nev.	20,000	100	1,320,000	Ju. 82	$1												
Vandewater, S	Nev.	200,000	100	*							19c	18c	18c		18c		18c	17c
Washington, S	Ariz.	200,000	10				5c										6c	
Willshire, G	Cal.	50,000	5	*														

* Non-assessable.

SALES.—Advance, 13,000; Albion, 200; Alta-Montana, 400; Barcelona, 3000; Best & Belcher, 450; Bonanza Chief, 1900; Bradshaw, 7400; Buckeye, 500; Bye & Bye, 4900; Calaveras, 2500; Calaveras W. & M. Co., 200; Carbonate Hill, 2900; Central Arizona, 875; Chapparal, 59,100; Cherokee, 13,400; Consolidated Imperial, 1000; Crowell, 6200; Decatur, 3100; Durango, 12,200; Eastern Oregon, 9400; Enterprise, 1200; Globe Copper, 14,000; Hortense, 1500; Lacrosse, 5200; Mexican, 400; Miner Boy, 1800; North Standard, 200; Oriental & Miller, 14,300; Quartz Creek, 500; Rappahannock, 5300; Silver Cliff, 2800; South Hite, 1700; South Pacific, 39,200; State Line, Nos. 1 & 4, 9600; Nos. 2 & 3, 80,600; Sutro Tunnel, 12,000; Taylor-Piumas, 15,000; Tioga, 3900; Tuscarora, 15,400; Union Consolidated, 480; Vandewater, 2300; Washington, 2900. Non-dividend shares sold, 372,905. Total shares sold at all the Exchanges, 532,689.

in prices recorded last week in some of the leading stocks has not been maintained. The Milton deal seems to have come to a stand-still; the high prices of last week bringing out too much stock to suit the dealers, and they have allowed it to drop to 24@25c., with some sales at a few cents higher. Massachusetts & New Mexico also declined from 27@22c. on moderate sales. Deer Isle has held its own pretty well at 70c., with sales to-day at 72@75c. The pool in this stock does not seem to be disposed to sell its holdings, but is quietly taking what is offered at market rates. Empire, dull and neglected at 27@28c.

3 P.M.—At the afternoon Boards, Allouez sold at $2½, which was bid; Atlantic, at $16, and asked; Bonanza, at $3¼, still asked; Calumet & Hecla, at $251; Franklin, $15 bid, $15½ asked; Harshaw, $1¼ bid; Huron, $3 bid, $3¼ asked; Osceola, $34 bid, $35 asked; Pewabic, $10½ sales and bid; Quincy, $63 bid; and Silver Islet, $19 bid. Milton sold at 25c; Massachusetts & New Mexico, at 21c.; Deer Isle, 73c. bid, 80c. asked.

REVIEW OF THE SAN FRANCISCO MARKET.

The San Francisco market remains very quiet at about steady prices. Union Consolidated has fallen off a little this week, being quoted at $6@$6½, as against $6½@$6⅝ last week. There is nothing of special interest from the mine, except that every thing looks favorable. It is said that the north-end mines are looking very well. Mr. Mackay, the present superintendent, visits the lower levels of the mines daily, and is attending closely to his duties. The Belcher Mining Company has levied an assessment of twenty-five cents per share, delinquent September 1st.

SAN FRANCISCO MINING STOCK QUOTATIONS.

Daily Range of Prices for the Week.

NAME OF COMPANY.	CLOSING QUOTATIONS. Aug. 11.	Aug. 12.	Aug. 14.	Aug. 15.	Aug. 16.	Aug. 17.
Alpha	1					
Alta	7-16	7-16	13-32	13-32	7-16	13-32
Bechtel	1-16	1-16			1-16	
Belcher	11-32	5-16	11-32	5-16	3-16	¼
Best & Belcher	5⅝	5⅝	5½	5⅝	5⅝	5⅝
Bodie	5⅛	5⅝	5	4⅞	5¼	5⅛
Bullion		3-32		1-16		3-32
Bulwer						
California	3-16		3-16	5-32	5-32	
Choliar	15-16	15-16	29-32	15-16	15-16	1¼
Con. Virginia	7-16	13-32	13-32	13-32	13-32	13-32
Crown Point	9-16		9-16		½	½
Eureka Con	14½	14¼	14¼	14¼	14¼	
Exchequer	3-16	3-16		⅛		5-32
Gould & Curry	2¾	2¾	2¾	2⅝	2¾	2¾
Grand Prize	7-16	13-32	7-16	9-16	11-16	11-16
Hale & Norcross	13-16	27-32	27-32	13-16	13-16	27-32
Manhattan			¾		1	1
Martin White			4⅛	4¼	4¼	4¼
Mexican	5⅝	5⅝	5¼	5¼	5¼	5⅛
Mono	13-16	13-16	21-32	¾	21-32	21-32
Mount Diablo	3¾				3⅞	3¾
Navajo	4¾	5⅛	5⅞	5⅞	5⅝	5¼
Northern Belle	12½	12½	12½		11⅞	
Noonday		¾	13-16	7-16	21-32	
Ophir	2¼	2¼	2¼	2⅛	2¼	2⅛
Oro	3-16	3-16	3-16	3-16	3-16	3-16
Overman		3-16			¼	3-16
Potosi	7-16		7-16	7-16	½	9-16
Savage	13-16	¾	11-16	21-32	11-16	¾
Scorpion	½	½	9-16	½	½	9-16
Sierra Nev	4⅝	4½	4¼	4¼	4¼	4¼
Silver King	14½		14	14¼	14	13⅞
Tip Top		2		1⅞	1⅞	1¾
Union Con	6	6	5⅞	5⅞	5¾	5½
Wales Con		5-16				¼
Yellow Jacket	1	1	1	1	5-16	1

METALS.

NEW YORK, Friday Evening, Aug. 18.

Copper.—The quiet condition of the copper market continues, transactions on a limited scale being made on the basis of 18¼ 18¼c. for Lake, and 17⅝c. for Baltimore and "Anchor," the brand manufactured by the Ansonia Brass and Copper Company, chiefly from Arizona black copper. The latest English cables have been £67 10s. for Chili Bars, and £73 for Best Selected.

Tin.—The market has been tolerably active during the week, sales footing up to about 200 to 300 tons. While spot is firm and strong, futures are weaker. We quote spot Straits 25⅛@25¼c., and September shipment 23c. To-day's cable to the New York Iron and Metal Exchange makes London £101.

Lead.—Our market has been quiet and weaker. There have been sales of about 300 tons at 5c., but lots could now possibly be obtained for 4·95c., which we quote for Common, while Refined is dull and quiet at 5·10c.

Messrs. John Wahl & Co., of St. Louis, wire us to-day as follows:

The market is quiet and dull; prices are unchanged. There is but little doing, and demand from hand to mouth only. Soft Missouri lead is held at 4·80c., and Hard lead 4·75c.

Spelter.—The dullness which has been characteristic of this market continues, and Domestic is quoted at 5¼@5⅝c., while Silesian is worth 5⅝@5½c.—*Sheet-Zinc* commands 7@7⅛c.

Antimony.—This metal is moderately active at 13@13⅛c. for Cookson's, and 11@11⅛c. for Hallett's.

BULLION MARKET.

NEW YORK, Friday Evening, Aug. 18.

The advance here in the rate for sight sterling exchange, on the 17th, with increased strength of the silver market abroad, has advanced quotations a little, as per annexed table:

DATE.	LONDON Pence.	N. Y. Cents.	DATE.	LONDON Pence.	N. Y. Cents.
Aug. 12	51⅞	113⅞	Aug. 16	*	114
Aug. 14	51⅞	113⅞	Aug. 17	*	114⅛
Aug. 15	*	114	Aug. 18	*	114⅛

* 51 15 16.

BULLION PRODUCTION FOR 1882.

We give below a statement showing the latest bullion shipments. These are officially obtained from the companies, where that is possible; and where official state-

ments can not be procured, we take the latest shipments published in those papers nearest to the mines reported. The table gives the amount shipped for the week up to the date given, as well as the aggregate shipments to such date, from the first of January, 1882.

The shipments of silver bullion are valued at $1.29·29 per ounce troy; gold at the standard $20.67 per ounce troy. The actual value of the silver in the following table is therefore subject to a discount, depending on the market price of silver. If the price of silver be counted at $1.12 per ounce, which has for some months been about its average value, the following figures, where they relate to silver bullion, should be diminished by about 13½ per cent to arrive at actual value.

MINES.	States.	For the week.	Month of August.	Year from Jan. 1st, 1882.
*Alice, G. S.	Mont.			$442,354
*Alta-Montana, G.	"			231,139
Barbee & Walker, S.	Utah	$4,193	$4,193	59,863
Betty O'Neal, S.	Nev.			34,893
*Black Bear, G.	Cal.			15,650
Bodie, G. S.	"	9,770	9,770	265,703
*Boston & Montana, G.	Mont.			155,039
*Caledonia, G.	Dak.			23,116
*Caribou, S.	Colo.			90,021
*Central Arizona, S.	Ariz.			114,416
*Christy S.	Utah.			133,606
*Chrysolite, S. L.	Colo.			264,139
Cons. Bobtail, G.	"			83,477
*Contention, S.	Ariz.			956,346
Crismon-Mammoth, G.	Utah	2,750	2,750	63,579
*Custer, G. S.	Idaho			527,043
*Deadwood-Terra, G.	Dak.			328,851
*Derbec Blue Grav., G.	Cal.			89,227
*Eureka Con., G. S. L.	Nev.	15,100	15,100	620,685
Evening Star, S. L.	Colo.			642,520
Father de Smet, G.	Dak.			225,721
Girard, S.	Ariz.			90,964
Grand Central, S.	"			700,000
Head Center, S.	"			25,360
*Homestake, G.	Dak.			602,656
Horn-Silver, S. L.	Utah	70,500	70,500	2,061,610
*Hope, S.	Mont.			138,762
Idaho, G.	Cal.			353,540
*Indian Queen, S.	Nev.			97,966
Inyo Cons., G.	Cal.			77,000
Ingersoll, S.	Ariz.			90,000
Iron Silver, S.	Colo.			541,328
*Jocuistita, S.	Mex.			‡466,819
*†Leeds, S.	Utah.			11,988
*Little Pittsburg, S. L.	Colo.			106,859
Manhattan, S.	Nev.			64,300
Morning Star, S. L.	Colo.			333,126
Mount Diablo, S.	Nev.			179,445
New York Hill, G.	Cal.			56,256
Noonday, G.	"			57,690
North Noonday, G.	"			56,545
Northern Belle, S.	Nev.	20,170	20,170	463,258
*†Ontario, S. L.	Utah.			1,538,672
Ophir, G. S.	Nev.			24,377
Pascoe, S.	Utah.			4,575
*Pleasant Valley, G. S.	Cal.			8,267
Robert E. Lee, S.	Colo.			292,550
Savage, S.	Nev.			3,500
*Silver Bow, G. S.	Mont.			158,230
Silver King, S.	Ariz.			181,957
*Spring Valley, G.	Cal.			152,000
Standard, G.	"	18,000	18,000	652,240
Star, S.	Nev.			36,722
Stormont, S.	Utah.	7,190	7,190	186,709
Syndicate, G.	Cal.			19,429
Tintic	Utah.			26,534
*Tip Top, S.	Ariz.	16,651		
*Tombstone, G. S.	"			‡590,286
Union Con., S.	Nev.			217,623
Vizina, S.	Ariz.			143,260
Total amount of shipments to date				$16,360,768.06

* Official. † Net. ‡ Assay value. *G. Gold. S. Silver. L. Lead.* ‖ 191,033.06.

Bullion Receipts at New York.—The bullion received from the mines at the various offices in this city during the week ended August 18th, as compiled from various sources, amounted to $212,000, as against $218,000 reported for the previous week. The receipts from January 1st, 1882, to date, are $9,277,059.51.

Exports and Imports of Gold and Silver at New York.

Exports.

Week ended August 12th	$200,000
Corresponding week last year	130,000
Since January 1st, 1882	42,450,263
Corresponding period last year	7,094,673

Imports.

Week ended August 12th	$32,929
Corresponding week last year	222,816
Since January 1st, 1882	2,261,811
Corresponding period last year	30,857,126

Foreign Bank Statements.—The governors of the Bank of England, at their weekly meeting to-day, advanced the bank's minimum rate for discount, 1 per cent, to 4 per cent. During the week, the bank lost £288,000 bullion, but the proportion of its reserve to its liabilities was raised from 36 5-16 to 37⅛ per cent, against 43⅜ per cent at the same date a year ago. To-day, the bank gained, £35,000 bullion on balance. The weekly statement of the Bank of France shows a gain of 3,075,000 francs, gold, and a loss of 3,400,000 francs, silver.

IRON MARKET REVIEW.

NEW YORK, Friday Evening, Aug. 18.

American Pig.—The firmness noted in Foundry iron for some time past continues, and has found expression in higher prices. There has been some business at full figures. Ordinary brands of No. 1 command $26, while choice brands fetch $26.50@$27, he latter for prompt delivery. No. 2 is quoted $23.50 @$24, while Gray Forge is $21.50@$22. Bessemer pig is lower, being held at $24@24.50, and the low price of steel rails is against any upward movement. Spiegeleisen is now nominally $26.50@$27 for 10 per cent, and $35.50@$36 for 20 per cent.

Scotch Pig.—We quote a sale of a lot of 500 tons at private terms, and additional lots of various brands, aggregating the same amount, at quotations. The spot market is tolerably firm, but future deliveries are in buyers' favor, owing to lower freights, and quotations for such pig are lower. The Glasgow market, too, has receded somewhat, being now 49s. 10d. for Warrants, according to a cable to the New York Exchange. We quote spot: Gartsherrie, $25.50@$25.75; Glengarnock, $24@$24.50; Eglinton, $23@$23.50; and Coltness, $27.

Rails.—We hear that a Pennsylvania mill has sold 20,000 tons of steel rails to a Vanderbilt road for $45, probably at mill. In the West, too, transactions based on low figures are reported. We quote according to size of order, section, etc., $45@$47 at mill. Nothing is doing in iron rails.

Old Rails.—Old rails have fluctuated somewhat, but close tolerably firm. Business has been restricted. We quote at the close for Ts, $26.50@$26.75, and for D. Hs., $28.75@$29.50.

Scrap.—There has been considerable business for future delivery, the details not having been made public. No. 1 is now $28@$28.50.

Philadelphia. Aug. 18.

A summary of the iron business for the week shows a falling off in the volume of business done in finished and construction iron. The unsettling factor in the iron market still is the duration of the strike of the iron-workers. Our best information makes it indefinite because of the determination of the workmen as well as the manufacturers. The latter met this week and carefully went over the whole ground of the strike and the probabilities involved in its continuance, and reaffirmed former resolutions. The workmen will, in time, discover their error, and until then it is no use to expect advances from either side. The Western supplies may be said to be exhausted. The Cincinnati and other mills at work are barely able to keep pace with requirements. Consumers are easy because they have covered requirements for a few weeks to come. Estimates have been carefully made as to fall requirements for iron, and the mill-owners feel perfectly safe in opposing demands to the end.

Pig Iron.—To-day's quotations are $26 for average No. 1; $23.50 for average No. 2; $22.50 for average Gray Forge. Business is done on both sides of these

BOSTON MINING STOCKS.

	Aug 10.		Aug. 11.		Aug. 12.		Aug. 14.		Aug. 15.		Aug. 16.		Sales.
	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	H.	L.	
Advance M. & M. Co.													
Allouez	2⅛								2.50		2⅝		400
Amie Con							.20						500
Arizona Queen							.05						100
Atlantic							16.00		16.00		15½		200
Atlas Min. & Devel. Co.	1.25				1.15		1.18		1.20				700
Aztec													
Blue Hill													
Bodie Con									5.30				100
Bonanza Devel.	3½		3¼		3¾	3.00	3⅜	3¼	3½	3⅜	3½		2,850
Boston & Ariz. Mil. Co.													
Bowman Silver													
Brunswick Antimony			12.00										100
Bulwer	1.80				1.90				1.82				300
California	.20												100
Calumet & Hecla	248.00				248.00		248.00				250.00	248.00	237
Carbonate Hill													
Carlisle, Colo													
Carolina Queen													
Catalpa					.30								100
Cedar Spring													
Central Arizona	.78												100
Chrysolite													
Columbus Gold													
Con. Golden Devel.													
Copperopolis													
Copper Prince													
Contentment													
Con. Virginia							.38						500
Crescent													
Crowell													
Cumberland Con.													
"Cusi"							2.00						100
Dana													
Deer Isle	.72	.70			.70		.70		.70				2,400
Douglas													
Durango													
El Gachi													
Empire	.30	.27			.30		.30						1,950
Franklin			14¾		14¾		15.00	14⅞	15 00		15.00		340
Gila County							.18	.17					300
Green Mountain													
Hancock Gold, N. C.					5.00		5.00		5½				700
Harshaw													
Hibernia	.08												500
Horn-Silver	9.25						9.38						150
Hukill													
Huron	3¾	3⅝	3¾		3¾		3¾	3½					745
Independence									.60				100
Indian Queen	1¾								1.65	1.50			250
Little Chief							.53		.53				400
Little Pittsburg													
Mammoth							.04	.03	.04				1,300
Mascot													
Mass. & New Mexico	.27	.23			.25		.26	.25	.26	.25			7,450
Milton	.32	.25			.24		.29	.26	.27	.24			9,700
Napa													
National													
Northern Belle													
Ontario													
Osceola	32½		33.00		35.00				35.00	34.50			142
Penn-Breckenridge													
Pewabic			10¾	10½									200
Phœnix													
Pine Tree													
Plymouth Gold	.32												600
Quincy	63.00	62.00	62.00	61½	61.50		64.00	62.50	63.50	63.00	63¾	63.50	581
Rappahannock					.19								500
Robinson Con	1.46				1.47				1.62				500
San Pedro	.40	.35											400
Sierra Nevada							4.88						25
Silver Cliff													
Silver Islet							17.00		19.00	17.50	19½	18½	415
Silver King													
Southern Belle													
South Pacific					14.00				.15				1,000
Standard									13.50				50
Star													
State Lines Nos. 1 & 4													
State Line Nos. 2 & 3	.26								.26				1,000
Stewart													
Sullivan							3.00						200
Sutro Tunnel													
Sycamore													
Tremont Silver													
Vizina Con													
West Minnesota	16												500

figures, but mostly in small lots. Makers look for a sharp improvement in demand and are refusing to modify quotations in the interest of buyers. Mill consumption has fallen off of late. English iron is lifeless. Scotch is too high to sell well. The Bessemer mills are doing nothing in the way of renewing Bessemer stocks. Offers are made from the other side at $23.50.

A sale of Muck Bar was made at $42. A few sellers are asking $43. Sales of Charcoal Blooms are reported, terms withheld; quotations, $68@$70. Anthracite Blooms are active, and Forge sold ahead.

Merchant Bar.—The week's transaction at mills and stores were chiefly of a retail character. Manufacturers quote at 2·55@2·60c. Considerable iron has been contracted for at 2·50c.; but it is said today that manufacturers are less anxious for orders at this figure, probably in view of firmer prices.

Nails.—Nails are advanced to $3.65, but current business is not affected. Buyers are urgent for prompt deliveries, which makers can not furnish. Stocks are very low.

Structural Iron.—This is active at 3c. for Angles; 3·8c. for Tees; Beams 4c. Tank has been a little quieter at 3¼c.; Shell strong at 4c.; and Flange, at 5c.

Sheet-Iron.—Orders have been declined this week on account of early delivery demanded. Customers can be taken care of by small deliveries at frequent intervals.

Steel Rails.—Manufacturers are unable to furnish encouraging evidences of activity. Quotations are $47@$50, but inside figures are probably a little less for large round lots, winter or spring delivery. Steel Blooms are quiet. Spiegeleisen is inquired for, and quotations are fluctuating. No sales of moment.

Tees are held at $27. Buyers are waiting for supplies.

PHILADELPHIA MINING STOCKS.

	Aug. 10.		Aug. 11.		Aug. 12.		Aug. 14.		Aug. 15.		Aug. 16.		Sales.
	H.	L.	H.	L.	H	L.	H.	L.	H.	L.	H.	L.	
American Cons													
Argent	.19		.20				.22		.20	.19	.21	.19	12,700
Arizona Southern													
Aztec													
Battle Mountain	.02						.03						17,000
Black Sulphuret													
Buena	.10				.09		.09		.09		.09		13,000
California													
Calista													
Cincinnati													
Compromise	.45				.42½						.42½		3,100
Cons. Virginia							.35		.35				600
Dauntless							.04				.05		5,500
Del Monte			.20										1.200
Denver City Con									.30				1.000
Fairview Con	.02		.02				.02						9,000
Eureka Con													
Girard	.40		.40		.40		.40	.37½	.37½		.37½		6,000
Golconda													
Golden Age Group													
Governor Group			.15		.16		.17	.15	.17				6,000
Grand Union	.09		.09		.09		.09		.09		.09		43,000
Gunnison Imp. Co													
Hancock													
Hibernia													
Homestake													
Intervener													
Iowa Gulch	.17		.18	.17	.18		.18		.18		.19	.17	30,200
King Bullion											.02		10,000
Ledger Con													
Little Diamond					.05						.05		7,000
Little Maud													
Long & Derry Hill							.02						8,000
McCullough													
Magnolia	.10	.09	.10	.09	.09		.09		.09	.08	.09		36,600
Montana													
Mount Lincoln					.03						.03		5,000
Mount Sheridan													
National			.01										2,500
Orion	.16								.16		.25		500
Pembina													
Penn-Breckenridge	.37½		.37½		.35		.32½		.30	.25	.30		18,500
Permanent													
Pizarro			.03		.03		.03						13,000
Pizarro Extension													
Rara Avis	1.65	1.40	1.55	1.50	1.55	1.50	1.55						3,200
Rara Avis Extension	.12		.12		.13				.13				5,800
Rico Pioneer													
San Pedro													
Silver Cord	.57½		.57½		.57½								4,800
Silver Plume													
Silver Rock													
Standard													
Sutro Tunnel													
Tombstone	1.10		1.10		1.07½	1.05	1.05	1.00	1.07½	1.05	1.10	1.07½	12,475
Victor													
Yale Mountain													

COAL TRADE REVIEW.

NEW YORK, Friday Evening, Aug. 18.

Anthracite.

The situation has, if any thing, improved. It is true that July prices still prevail and are shaded in many instances. But on the other hand, there seems no danger of a complete break, of which there was some talk. The feeling that a restriction would be advisable, for a few days at least, is gaining ground, and where formerly it had only one advocate, it has now three or four. It seems that if any further weakening should occur, a restriction would be very quickly agreed upon. There are those, too, who hold that the scarcity of Eastern vessels has had the effect of preventing the movement of coal to that quarter and has made matters appear worse than they really are. This may be true to some extent, but still the fact remains that the yards of dealers and retailers in this city are full of coal, and that the stocks at Western points are very heavy, though not concentrated at any one point. Altogether, the fears of a break entertained by many are groundless; but, on the other hand, the situation is undoubtedly not such as to stand any experimenting.

Freights to the East are easier, Providence being 80@85c. for barges, and 90@95c. for schooners.

Mr. John H. Jones, accountant, has just issued his statement of the anthracite coal tonnage for July, according to which the production for that month this year was 2,757,249 tons, against 2,572,100 tons last year. The total for the first seven months of the year has been 15,325,101 tons, against 15,039,596 last year, an increase of 285,504 tons. The stock of coal at tidewater shipping points on July 31st, 1882, was 575,532 tons, against 583,936 at the close of the preceding month, a decline, therefore, of 8404 tons.

Bituminous.

On the 16th, a conference was held between the men and the companies in the Cumberland District. The latter firmly declined to make any concessions in the way of discharging new men, detachments of whom are steadily coming in. The conference resulted in nothing but to show the men the inability of their leaders to extort a concession, and the inevitable result was, that the break long expected followed. Yesterday, forty of the old miners of the George's Creek Company applied for work, and a number of the American Company's miners followed suit. Unfortunately, the approaching end of the strike is marked by an act that had long been feared by the companies. Yesterday, the Astor mine of the Consolidation Company burst into flames. It is given out that the fire was communicated from the burning Spruce Hill mine, but the distance of the latter and other circumstances point to incendiarism. The fire is one which may prove disastrous.

As yet, of course, the market is little affected by the probable resumption in the Cumberland field, because it will take weeks before mining and transportation get into shape. The market, however, is weaker, though not quotably lower. We quote $4.35@$4.50 alongside.

From Philadelphia, a gentlemen prominently connected with the coal trade writes us the following, under date of August 17th:

The trade is not "booming up" to order, according to the programme laid, and few sales are made at the new prices. An advance on September 1st, as spoken of, would be a mistake. The indications, however, tend to a better demand as soon as the warm weather is over, and the fall trade is promising, if prices are not forced too high.

Vessels are scarce for this season, and rates of freights gradually stiffening: $1.40@$1.50 for Boston, according to size; $1.10@$1.15 and discharge, to Portland. Southern rates are creeping up faster than Eastern—70c. to Norfolk, and 85c. to Richmond are now asked, and vessels scarce, while a short time ago the rates went down to 50 @60c.

Horsford's Acid Phosphate

acts as food for an exhausted brain.

WANTED.—A practical and skillful Mining Engineer and Geologist to take charge of Hematite mining in Virginia; a middle-aged, married man preferred. Address, with testimonials, HEMATITE, care of the ENGINEERING AND MINING JOURNAL, P.O. Box 1833, New York.

OFFICE HOMESTAKE MINING COMPANY,
18 Wall Street,

NEW YORK, Aug. 12, 1882.

DIVIDEND NO. 48.

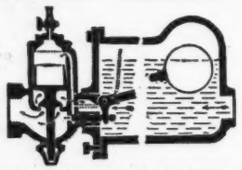
The regular monthly dividend of FORTY CENTS per share has been declared for July, payable at the office of the Transfer-Agents, Lounsbery & Haggin, 18 Wall Street, on the 25th inst.

Transfer-books close on the 19th inst.

LOUNSBERY & HAGGIN,
Transfer-Agents.

ONE DUPLEX AIR-COMPRESSOR FOR SALE.—Nearly new; run but a few months; in first-class order. Having no further use for it, will sell at a bargain. It can be seen in operation in Jackson County, Ohio. National Drill and Compressor Co., Port Carbon, Pa., makers. No. 39. Diameter of steam cylinder, 22; diameter of air cylinder, 24; stroke in inches, 42; No. of revolutions, 58; cubic feet of free air per minute, 2500; No. of 3-inch drills compressor will run, 36; weight, 71,500 lbs Also, one new revolving wire coal screen for making nut and pea coal. Address, JOHN H. PATTERSON,
Dayton, Ohio.

THE CURTIS STEAM TRAP



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